This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

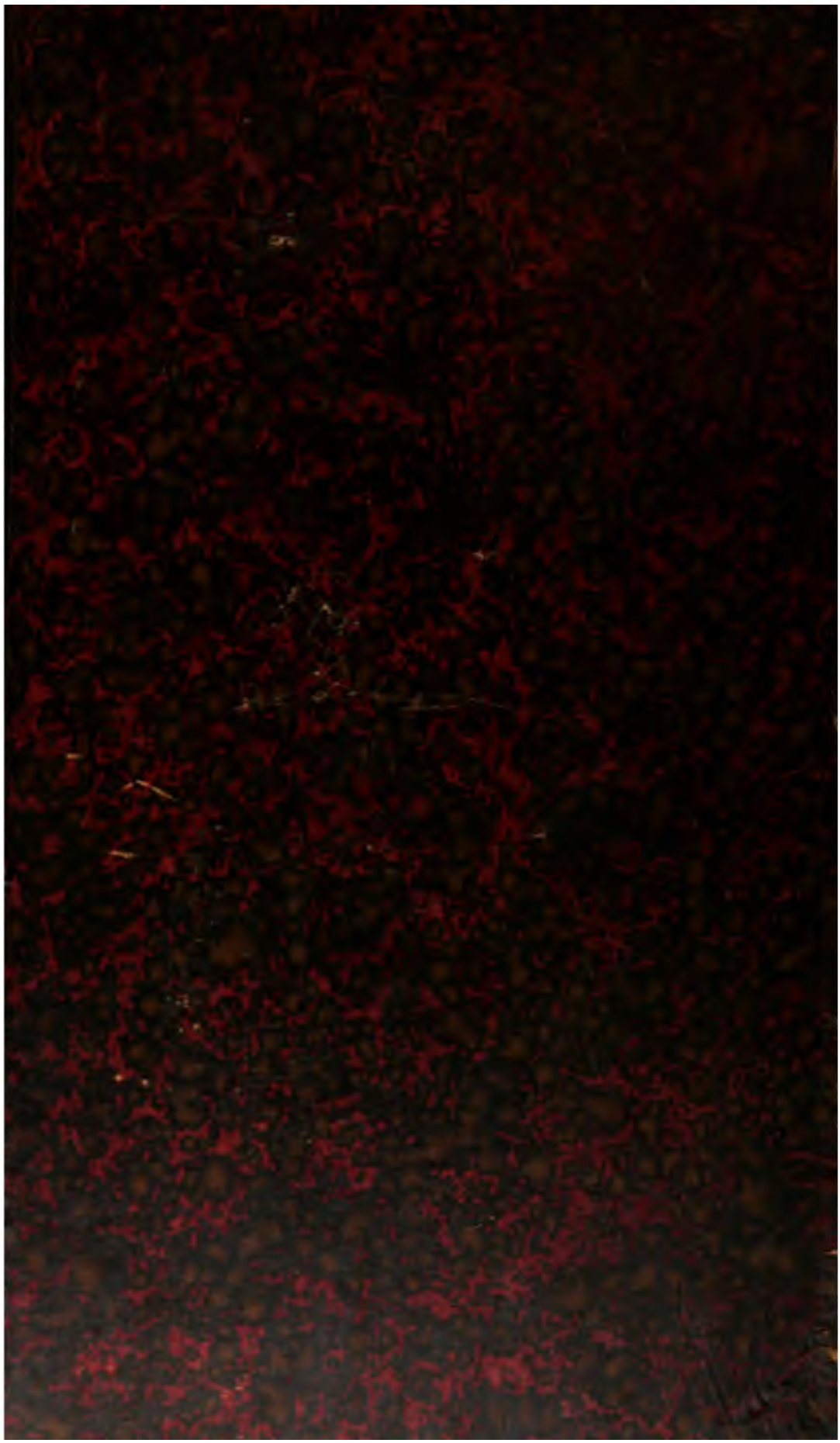
+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

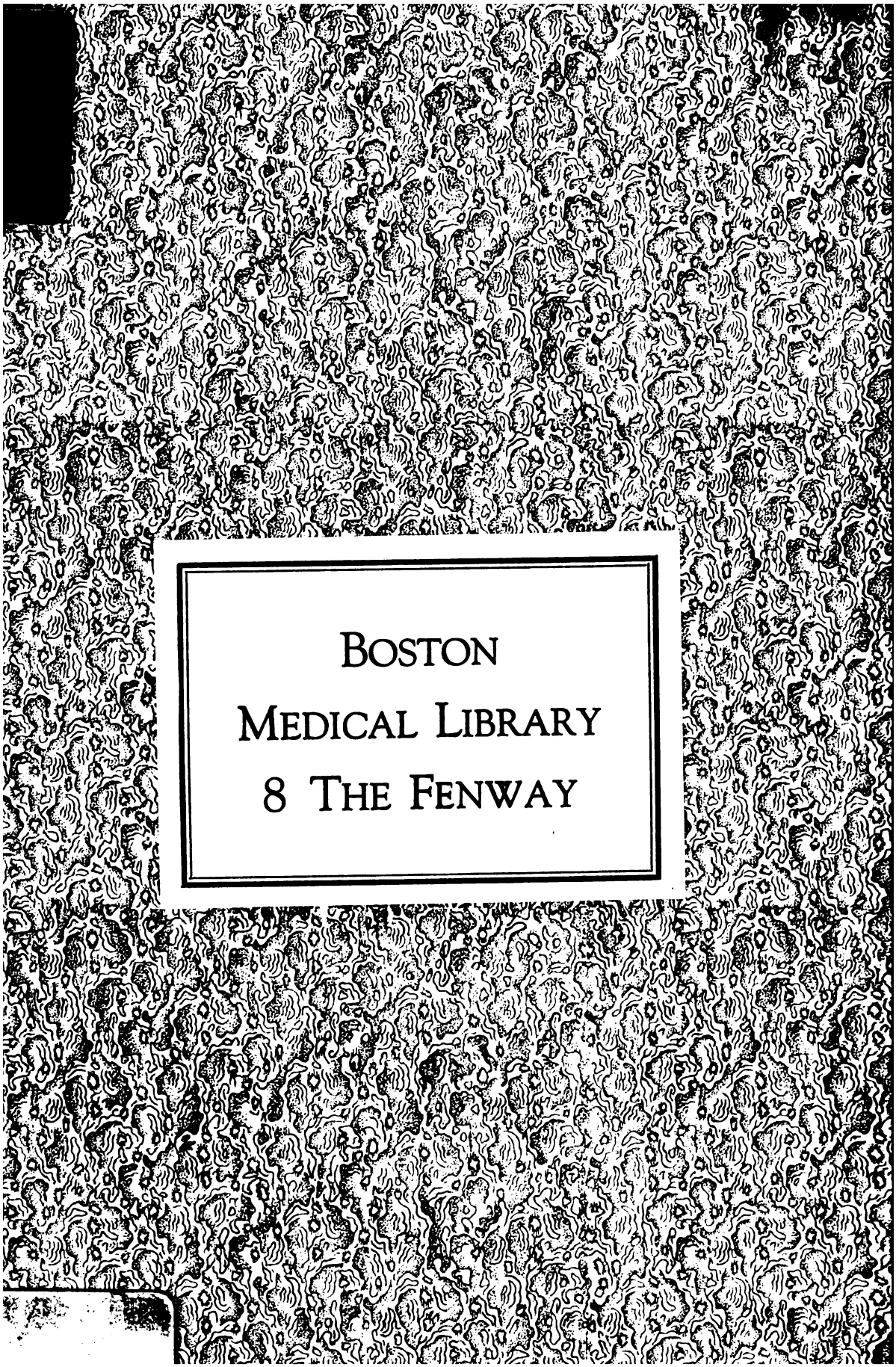
+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`




BOSTON
MEDICAL LIBRARY
8 THE FENWAY

THE

THERAPEUTIC GAZETT

A MONTHLY JOURNAL

OF

PHYSIOLOGICAL AND CLINICAL THERAPEUTICS.

EDITED BY

ROBERT MEADE SMITH, A.M., M.D.,

PROFESSOR OF COMPARATIVE PHYSIOLOGY IN THE UNIVERSITY OF PENNSYLVANIA.

WHOLE SERIES, VOL. XIV. THIRD SERIES, VOL. VI.

GEORGE S. DAVIS;

DETROIT, MICH., AND PHILADELPHIA, PA.

1890.

BOSTON MEDICAL LIBRARY
IN THE
FRANCIS A. COUNTWAY
LIBRARY OF MEDICINE

Entered according to Act of Congress, in the year 1890, by
GEORGE S. DAVIS,
In the Office of the Librarian of Congress, at Washington.

LIPPINCOTT
STEREOTYPERS AND PRINTERS
COMPANY

—THE—

Therapeutic Gazette.

Whole Series, Vol. XIV. | DETROIT, MICH., PHILADELPHIA, PA., } January 15, 1890. | Third Series, Vol. VI. No. 1.

CONTENTS.

Original Communications.

PAGE

New Therapeutic Agencies. By Prof. Dujardin-Beaumetz..... 1
Two or Three Strong Practical Therapeutic Points of Every-Day Application. By Henry M. Field, M.D..... 11
Historical, Critical, and Scientific Aspects of Brown-Séquard's Discovery —The So-called "Elixir." By G. Archie Stockwell, M.D., F.Z.S. (concluded)..... 14
Arsenite of Copper in Bowel Complaints. By L. Worsham, M.D..... 19
Report of Three Cases of Remarkably Slow Pulse. By D. W. Prentiss, M.D. (concluded).. 20

Leading Articles.

The Action of Sulphonal as a Hypnotic 31
Lead-Poisoning..... 32
The Use of Bromide of Rubidium and Ammonium in Epilepsy..... 34
Hypnotism..... 34
An Important Work..... 34

Reports on Therapeutic Progress.

Treatment of Whooping-Cough by Eucalyptus..... 30

PAGE

Cholectotomy..... 35
The Diagnosis of Pyosalpinx..... 36
The Treating of Pneumonia by the Ice-Bag..... 37
The Physiological Action of the Iodide of Potassium..... 39
Cocaine in Diabetes..... 40
The Physiological Action of Hydrocyanic Acid..... 42
Glycosuria..... 42
The Physiological Action of Thallin..... 45
The Comparative Value of Antipyrin, Antifebrin, and Phenacetin as Antipyretics..... 45
The Treatment of Hepatic Jaundice by Hypodermic Injections of Pilocarpine..... 46
Syzygium Jambolanum in Artificial Diabetes..... 46
The Amount of Fat in Condensed Milk 47
The Therapeutic Value of Senna-Pods 48
The Treatment of Endometritis..... 48
The Elimination by the Stomach of Morphine Injected Subcutaneously.... 49
The Cure of Hemorrhoids by Excision and Closure with the Buried Animal Suture..... 49
The Treatment of Syphilis by Quinine and Mercurial Injections..... 53
Arsenical Paralysis..... 53
Eucalyptus in Scarlet Fever..... 54
The Therapeutic Properties of Infusion of Yellow Raspberry..... 54

PAGE

Reviews..... 55

Correspondence.

Berlin Letter..... 58
Berlin Letter..... 60
London Letter..... 62
Paris Letter..... 64
Contagion of Scarlet Fever..... 65
Nitro-Glycerin as a Remedy for Shock.. 66
The Dose of Gelsemium Sempervirens.. 66
Sulphonal as a Hypnotic in Typhoid Fever..... 67
Remarkable Tolerance for Morphine..... 67

Notes and Queries.

The New Hypnotics—Sulphonal, Amylene Hydrate, Hydrobromide of Hyoscine, Hypnone, Paraldehyde, and Urethan..... 68
The Treatment of Chronic Metritis by Chloride of Zinc Pencils..... 71
A New Diagnostic Sign of Abscess of the Antrum..... 71
Solanum Carolinense in Epilepsy..... 71
A Method of Administering Chloral Hydrate in Eclampsia..... 71
The Non-Tubercular and Non-Cardiac Hæmoptyses of Elderly Persons..... 72
The Action of Salicylate of Sodium upon the Uterus..... 72
Bromoform in Whooping-Cough..... 72

Original Communications.

*NEW THERAPEUTIC AGENCIES.**

LECTURE III.—ON GASTRIC NEURASTHENIA AND ITS TREATMENT.†

By Professor Dujardin-Beaumetz, Paris, France.

GENTLEMEN:—A female patient has just been to our clinic to obtain help for a nervous malady from which she is suffering. It is an affection characterized by a train of odd symptoms, among which are to be noted: a sense of general enfeeblement; coldness of the extremities; a change of disposition resulting in hypochondriasis and gloom; wakefulness, manifesting itself generally at the same hour, about midnight; and a general emaciation, the first cause of which has escaped the knowledge of the physicians who have already attended her.

Notwithstanding the strangeness and manifoldness of the nervous symptoms of which this patient complains, you will not find in her the clear marks, the stigmata, of hysteria. She has not the *embonpoint* nor the outward appearance of this disease,—she is, on the contrary, thin and spare, without any hysterical crises properly so called; there is

* A second series of "New Medications," published in 1887.

† From advance sheets, revised by the author (translated by E. P. Hurd, M.D.). Lectures delivered in Cochin Hospital, Paris, France.

no hysterogenous zone, no anæsthesia of the pharynx. There is nothing on the part of the uterus to account for her sufferings, and at the same time she complains of great abdominal discomfort, and for years she has received treatment from a specialist who has made repeated cauterizations of the os and cervix without benefit.

But there exist evident disorders in the functions of the digestive tube; digestion is habitually long and laborious; the patient complains of gases distending the stomach and stopping digestion; has alternately diarrhœa and constipation, but is oftener constipated. The fæces have an excessively fetid odor; there is at times a mucous enteritis. The appetite is capricious, and the patient carefully avoids many articles of diet which she has found to give her pain and discomfort. All these symptoms go back to a distant date; she has, in fact, long been a dyspeptic and a nervous invalid.

If now, after having ascertained these data, you examine the abdomen more attentively, you note both by percussion and by succussion and by the *bruit de clapotement* (a peculiar swashing sound), which the latter determines, that the stomach is greatly distended; the greater curvature descends considerably below the umbilicus; in certain cases, as you know, it even reaches the pubes, so that the stomach seems to occupy the entire abdominal cavity.

If you make the patient take a long breath while grasping in your hand the left flank just below the border of the false ribs, you will feel a hard, smooth organ between your fingers which can be easily seized; this is the kidney. Percussion of the liver enables you to perceive some enlargement, and the attentive scrutiny of the hands, which are cold and damp, will reveal an exaggerated prominence of certain articulations of the phalanges, and in particular of that of the medius.

You will now be able to make your diagnosis, and affirm that this woman belongs to that class of patients who have dilated stomachs, a class which is very numerous at the present day, and comprises, in the expressive phraseology of Trastour, the *déséquilibrés du ventre* (those whose stomachs are not equilibrated); they constitute the rank and file of the neurasthenic.* It is to the treatment of this gastric neurasthenia that I now desire to call your attention.

Under the names of nervousness, neuropathy, hystericism, neurasthenia, medical writers have endeavored to designate an aggregate of symptoms which seems to be differentiated from both true hypochondriasis and from hysteria, and they have created a series of divisions in these neurasthenic states corresponding to the different forms which they had before them. Thus Beard, who invented the word *neurasthenia*, described a neurasthenia by cerebral, spinal, sexual, and even gastric exhaustion.

Writers have also tried to discover the first cause of these nervous perturbations, of this exhaustion of the nervous system, and some have placed this cause in fatigue of the cerebral or spinal functions, in disorders of the great sympathetic, in uterine troubles, in alterations of the blood; but one of the organs often incriminated has been the stomach, and to-day the labors of Bouchard and those of the school of Lyons have given to this neurasthenia a form more precise and more concrete, and have enabled us to constitute a pathological aggregate having for its basis dilatation of the stomach.

The very intimate relations which exist between the functions of the cord and brain have engaged the attention of physicians from remote antiquity, and we have evidence of this in the name *hypochondriasis*, which, since Galen's time, has been applied to a great number of nervous disorders. It is certain that, long after Galen, medical writers were in the habit of classing under this name of *hypochondriasis* (*i.e.*, a disease having its origin in the hypochondriac regions) almost all strange, morbid, nervous manifestations. Coming down nearer to the present time, to Sydenham's epoch, we find this writer distinguishing hypochondriasis from another nervous state which he compares to a Proteus, taking an infinite variety of forms; to a chamelion, whose colors are so various; and this malady he called hysteria. Lastly, Whigtt described a third form of nervous functional disorder which was neither hypochondriasis nor hysteria, and which had chiefly for its origin stomach troubles.

To explain these disorders dependent on bad functionment of the nervous system three theories or hypotheses have been broached,—a theory purely nervous, a mechanical theory, and a humoral theory. Let us examine rapidly these three theories.

The nervous theory is the oldest. It is this which Beard has ably defended in speaking of nervous exhaustion of dyspeptic

* Trastour, "Les Déséquilibrés du Ventre," etc., Paris, 1889.

origin.* Leven has latterly taken up anew this theory, and has assigned to the modifications of the nerve-cells of the solar plexus a preponderant *rôle*. He believes that irritations of these cells determine disorders in the gastric mucosa and in the neighboring organs.†

I protest that this explanation explains nothing. To say that irritation of the solar plexus entails disorders of the gastric mucous membrane, is to make a statement which would demand an anatomical demonstration more precise than that which has been furnished by Leven. One might well ask, moreover, What is the cause of these irritations of the solar plexus? I pass now to the second theory, which is somewhat more plausible, and which has been advanced by Glenard.‡

According to this writer, all sorts of functional nervous troubles, such as are included under the head of neurasthenia, depend on a modification effected in the reciprocal relations of the different portions of the intestine. These modifications or displacements, to which he gives the name of *ptoses*, may pertain to all the organs contained in the abdomen.

But what dominates in this splanchnoptosis (to speak the language of the school of Lyons) is the prolapsus of the right flexure of the colon and the first part of the transverse colon. Here is the fundamental organic lesion, the constant and irremediable lesion of enteroptosis, and it is this enteroptosis which is the origin of all the phenomena observed in patients whose gastric functions are not equilibrated.

It was in the year 1885 that Glenard began to make known this theory of enteroptosis, and we see it defended in Paris by Féréol,§ at Nantes by Trastour, in Italy by Sanctis;‖ moreover, Cuilleret¶ has published in the *Gazette des Hôpitaux* a very interesting article on this affection. Lastly, since then, Glenard has communicated upon this subject a great number of observations which give support to these views.

The mobility of the kidneys, so frequent in these patients with dilated stomachs, is, according to this theory, but a mechanical consequence of the prolapsus of the right flexure of the colon, and the nephroptosis thus results from the enteroptosis. To the purely mechanical theory of Glenard, we may oppose the humoral theory of Bouchard, contrasting, if we may so speak, Bouchard's disease with Glenard's disease.

It was in 1884 that Bouchard made known to the Medical Society of the Hospitals the important pathogenic *rôle* which may be assigned to dilatation of the stomach, and it must be acknowledged that the discoveries of Armand Gautier concerning the ptomaïnes and leucomaïnes seem to confirm in great part the views of Bouchard.** In his able work on the auto-intoxications, Professor Bouchard takes up the subject of dilatation of the stomach, and considers it as a type of chronic auto-intoxications of intestinal origin.

The functions of the stomach are arrested or hindered by the prolonged sojourn of aliments in that cavity, and processes of fermentation take place which lead to the production of ptomaïnes. These ptomaïnes, carried along the digestive tube, are taken up by the absorbents, and their presence in the economy gives rise to a series of symptoms of self-poisoning, the latter being the determining cause of the varied morbid phenomena presented by the subjects of gastrectasis.

In this pathogeny the *rôle* of the liver is considerable. You know the important office assigned to the liver as a destroyer of alkaloids. One of Bouchard's pupils, G. H. Roger, repeating the experiments of Heger, of Schiff, and of Victor Jacques, has given us a clear exposition of this protective *rôle* exercised by the liver. When the dilatation of the stomach causes too great a production of ptomaïnes, there results a secondary congestion of the liver, which augments in volume and depresses the right kidney, and if these congestions repeat themselves often, it is easy to see that this transient depression

* G. M. Beard, "A Treatise on Nervous Exhaustion," etc. New York: Wm. Wood & Co., 1880.

† Leven, "Estomac et Cerveau," Paris, 1884, and "La Névrose," Paris, 1887.

‡ Glenard, "Application de la Méthode naturelle à l'analyse de la Dyspepsie nerveuse;" "Détermination d'une Espèce"—"De l'Entéroptose" (*Lyon Médical*, mars, 1885); "Entéroptose et Neurasthénie" (Société Médicale des Hôpitaux de Paris, 15 mai, 1886, et *Semaine Médicale*, 19 mai, 1886); "A propos d'un Cas de Neurasthénie gastrique" (entéroptose traumatique); "Diagnostic de l'Entéroptose," "Conférence Clinique de l'Hôtel-Dieu de Lyon" (*Province Médicale*, 7 avril, 1887); "Exposé Sommaire du Traitement de l'Entéroptose" (*Lyon Médical*, juin et juillet, 1887).

§ Féréol, "De l'Entéroptose" (*Bulletin de la Société Médicale des Hôpitaux*, 5 janvier, 1887).

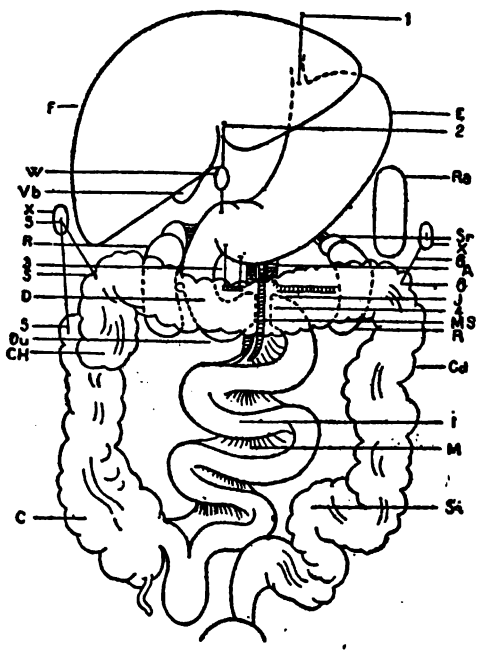
‖ De Sanctis, "Sulla Malattia di Glenard," etc., 1888.

¶ Cuilleret, "A Clinical Study on Enteroptoses, or Glenard's Disease" (*Gaz. des Hôp.*, 1888, No. 109).

** Bouchard, "Lessons on the Auto-Intoxications in Disease," Paris, 1887.

may shortly be transformed into a persistent renal ectopia. Lastly, the elimination of the ptomaïnes, thus absorbed by the kidney, implies the presence of congestion, and even of nephritis, in the subjects of gastrectasis. (Fig 1.)

FIG. 1.



Normal state (Glenard). *A*, aorta; *E*, stomach; *C*, cæcum; *Cd*, descending colon; *CH*, right flexure of the colon; *D*, duodenum; *Du*, bas fond of duodenum; *F*, liver; *I*, ileum; *J*, jejunum; *M*, mesentery; *Ms*, superior mesenteric artery; *R*, kidney; *Ra*, spleen; *Si*, sigmoid flexure; *Sr*, suprarenal capsule; *Vb*, gall-bladder; *W*, foramen of Winslow; *X*, tenth rib; 1, œsophagus; 2, gast. hep. om.; 3, ligament, pylori.-colic; 4, ligament. mesent. sup.; 5, suspensory fold of right flexure; 6, ligament pleuro-colic.

Hence, then, to sum up, a dyscrasic state of the blood produced by the presence of ptomaïnes formed in the dilated stomach, direct action of these ptomaïnes on all the departments of the organism, and, in particular, on the cerebro-spinal axis, the liver, the kidney,—such, according to Glenard, is the mechanism by which we are to explain the symptomatology so peculiar and so variable of gastric dilatation.

There remains to be explained the primordial cause of the dilatation and the enfeeblement, for the most part congenital, of the muscular coat of the stomach. This is a point which is still very obscure, but it seems, nevertheless, that in those subjects whose stomachs lack equilibration, the origin of the dilatation goes back to the first periods of life, and results from the two following factors,—heredity and faulty alimentation. I have no doubt as to the first factor, and can affirm that I have often seen instances where individuals with dilated stomachs have had offspring who became sufferers from the same affection. Then, again, errors and defects of diet in early life have much to do with the genesis of the complaint; but we are obliged to call in, besides, another auxiliary factor,—namely, a predisposition of nervous origin which favors distention of the muscular coat of the stomach.

But what appears strange in this connection is that dilatations consecutive to mechanical obstructions of the stomach, dilatations which form a special group that is well known, are not accompanied by the nervous phenomena which we see supervene in subjects of gastrectasis, which I may call spontaneous. I have seen enormous stomachs resulting from an obliteration of the pylorus, and I have very rarely observed in these cases the symptomatic aggregate which characterizes those "whose stomachs lack equilibration."

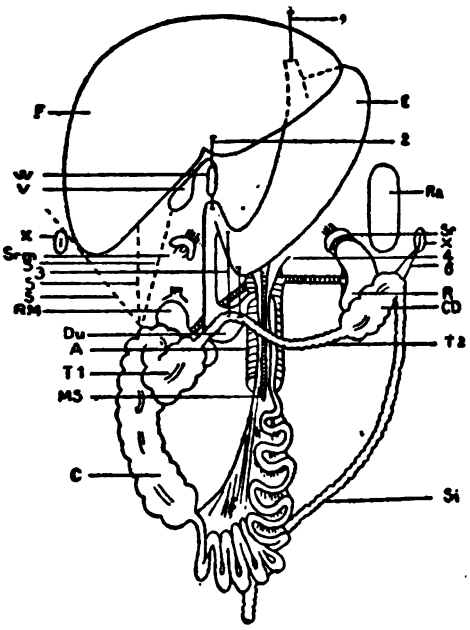
Of the two theories, that of Glenard and that of Bouchard, which shall we choose? As for myself, I have long regarded Bouchard's theory as the most worthy of acceptance as being the most conformable to physiological data, and as involving less of hypothesis than the other.

It is in the large intestine that Glenard places the primordial and necessary cause of the enteroptosis, but this in his estimation is a mechanical trouble, bringing about physical disturbances. According to this writer, the prolapsus of the right flexure of the colon entails the downward displacement and contraction of the transverse colon, which he describes under the name of *corde colique transverse* (transverse colon-cord) on account of the corded feel of the gut. This downward displacement and this diminution of calibre enables one easily to feel the beatings of the aorta in the neurasthenic. To this corded condition of the transverse colon succeeds an ampullary dilatation of the left flexure of the colon, then a diminution of calibre of all the descending colon and of the sigmoid flexure to the anus. This is what Glenard describes under the name of *cordon sigmoïdal*. (Fig. 2.)

I am far from having noted in all my cases of gastrectàsia these mechanical and physical troubles, and even in a certain number I have observed, on the contrary, a dilatation of the descending colon, and I believe that there are a good many patients who present the nervous

disorders of gastric neurasthenia, and in whom these disorders depend not on a dilatation of the stomach but on a dilatation of the colon, a dilatation affecting all parts of this intestine. These neurasthenic subjects, then, are sufferers from dilatation of the large intestine, and are to be cured, not by lavage of the stomach, but by antiseptic lavage of the colon and rectum.

FIG. 2.



Pathological state (Glenard), complicated with a nephroptosis of the third degree. *A*, aorta (batt. epig.); *C*, cæcum (downward and inward displacement); *Cd*, left flexure of the colon (in place), preceded by an ampullary dilatation; *Du*, bas fond of the duodenum; *E*, stomach, distorted by the transverse colon; *F*, liver; *Ms*, mesentery; *R*, kidney; *Ra*, spleen; *Rm*, kidney (ectopia of third degree); *Si*, *cordon sigmoidal*; *Sr*, suprarenal capsule; *Sm*, ibid. on the right side, with its ligament of union to the kidney torn after distention (whence ectopia of the kidney, according to Glenard); *T1*, first part of transverse colon in prolapsus; *T2*, *transverse colon cord*; *X*, tenth rib; *V*, gall-bladder; *W*, foramen of Winslow.

Moreover, Glenard and Bouchard have much to say about the troubles of defecation which affect almost all victims of dilatation. There is constipation, the fæcal matters are pasty, fetid, and acid, the acidity, according to Bouchard, being due to acetic acid; there is sometimes, even, mucous or pseudo-membranous enteritis.

But, to come down to practical points, it is not necessary for you to bother yourselves too much about either Bouchard's or Glenard's theory, for, strange as it may seem, these two theories, which are so dissimilar, result in therapeutic principles and means which are almost identical.

Glenard intends that his treatment shall fulfil the following conditions:

1. To combat the visceral prolapsus and augment the abdominal tension by means of an appropriate abdominal belt.
2. To regulate the intestinal evacuations.
3. To institute a special regimen in order to tonify the digestive organs.

If to these means you add gastro-intestinal antisepsis, you will have the treatment counselled by Bouchard, and in conjoining lavages of the stomach and intestine, you will have that which I propose.

Before entering upon the exposition of this treatment, which is the real object of this lecture, I ought to tell you what are the signs which will enable you to detect dilatation of the stomach, and how you ought to proceed to examine those whose stomachs lack equilibration; but were I to set forth all the details which pertain to this subject, it would take several lectures,—therefore I shall have to refer you to Bouchard's later writings, and especially to those of Glenard, who has stated with great method and perspicacity the mode of exploration of the abdomen in these cases.*

I ought to remind you just here that the most important sign of dilatation is the *bruit de clapotement*. In order that there may be dilatation of the stomach, this bruit must, as you know, be perceived below the oblique line which passes from the borders of the false ribs on the left side to the umbilicus. Any *bruit de clapotement* heard above this line must be considered as physiological.

It is not always easy to perceive this *bruit de clapotement*, even in the case of dilatations that are considerable, and this for two reasons: first, the vacuity of the stomach, and, secondly and chiefly, the contraction of the muscles of the abdomen, and in particular, of the recti muscles.

It is easy to remedy the first cause by making the patient drink a glass of cold water while fasting, but it is more difficult to overcome the contraction of the abdominal muscles; you will, however, ordinarily succeed by making the patient take a long breath, or by pressing suddenly with one or two fingers over the abdominal wall, or, by

* Glenard, "*À propos* of a Case of Gastric Neurasthenia," Paris, 1887; "Conférences Cliniques de l'Hôtel-Dieu de Lyon" (*Province Médicale*, 1887).

grasping with both hands the two sides of the abdomen and making over the belly quick, violent movements, such as those which we cause when we wish to detect the Hippocratic succussion in cases of pneumothorax.

Do not forget to examine attentively the iliac fossæ; often you will find there a bruit of gaseous collision, which, by its timbre, is differentiated from the *bruit de clapotement;* this bruit indicates the dilatation of the large intestine. I pass now to the study of the treatment which you should institute in cases of dilatation of the stomach. This treatment comprehends two great indications; the one is addressed to the troubles of the stomach, the other to the state of the nervous system. To remedy the gastro-intestinal disorders, you may employ two orders of means,—the one constituting by their aggregate intestinal antisepsis, the others forming the group of mechanical processes put in usage in order to act directly on the stomach.

I assign the first place here to intestinal antisepsis, advocating the views of Bouchard. As I have already said, I consider intestinal antisepsis as the capital point in the aggregate of therapeutic means to be employed in cases of dilated stomach.

This intestinal antisepsis comprehends several processes or sets of agencies. We may, for instance, endeavor to benefit our patient by pharmaceutical remedies, or we may hasten the expulsion from the intestine of septic matters; we may interfere directly by washing out the stomach or intestine; or, lastly, by a special dietetic regimen, we may reduce to the minimum the quantity of ptomaïnes formed in the alimentary canal. Let us examine now how we are to proceed to fulfil each of these indications.

Among the pharmaceutical remedies, we have certain inert powders and disinfectant substances. The success formerly obtained by Trousseau in the treatment of diseases of the stomach with subnitrate of bismuth, by Patterson with the mixture of magnesia and bismuth, by Belloc with his powder of charcoal, is to-day easily explicable, as all these substances are antifermentative, and to a certain extent prevent putrefactive changes in the stomach. The discovery of salicylate of bismuth, and more recently of naphthol, has enabled us still more effectually to carry out intestinal antisepsis.

You may, then, in your cases of dilated stomachs, make use of capsules containing these antifermentative powders. Where the dilatation is inconsiderable, and the gastric and intestinal putridity is not excessive, you will make use of the following formula:

Salicylate of bismuth,
Magnesia,
Bicarbonate of soda, aa 10 grammes (150 grains). M.
Divide in chart., no. xxx. Powders to be taken in capsules.

In cases when the disease is more advanced, you can employ the following combination:

Salicylate of bismuth,
Naphthol α,
Carb. lig., aa 10 grammes. M.
Divide in chart., no. xxx. Powders to be taken in capsules.

The patient will swallow one of these capsules with his breakfast or dinner.

You should always prefer the naphthol α to the naphthol β, the first being, as Maximowitch has shown, more soluble, more antiseptic, and less toxic than the second. You should also remember that in certain persons with dilated stomachs, naphthol is not well supported, even in small doses; in such cases you will have to be content with the first formula.

Laxatives have a rather important *rôle* in the treatment of dilated stomachs. They enable us to obviate the constipation so frequent in this disease, and to expel from the economy the toxines which are produced throughout the whole length of the digestive tube. All the laxatives may be employed, from the purgative waters to the laxative powders (senna, sulphur, rhubarb, etc.).

As I intend to devote an entire lecture to the treatment of constipation and diarrhœa, I shall then set forth with considerable completeness the history and uses of the new purgatives at your disposal.

I will content myself at present by telling you that I use ordinarily either the natural purgative waters,—Villa-Cabras or Rubinat,—a tumblerful being taken in the morning on an empty stomach, or the following laxative powder, of which the patient may take a dessertspoonful in half a glass of water between nine and ten o'clock in the evening:

Pulv. sennæ,
Pulv. sulphur, aa 6 grammes (℥iss);
Pulv. anise,
Pulv. fennel, aa 3 grammes (gr. xlv);
Pulv. cream of tartar, 2 grammes (℥ss);
Pulv. licorice, 8 grammes (℥ii);
Pulv. sugar, 25 grammes (℥ vi¼). M.

If the majority of patients with dilated stomachs are constipated, there are cases, on the other hand, where there is a manifest tendency to diarrhœa. I formerly counselled for these diarrhœas sulphide of carbon water, obtained by agitating sulphide of carbon with water; since the introduction of naphthol, I prefer this latter medicament.

In these cases, I modify somewhat the composition of the capsules, and have them prepared in this way:

Salicylate of bismuth,
Naphthol α,
Prepared chalk,
Phosphate of lime, aa 10 grammes (gr. cl). M.
Divide into forty capsules; one capsule to be taken with breakfast and dinner.

What, in my experience, succeeds best in these cases of dilatation with diarrhœa, is lavages of the intestine by the aid of antiseptic solutions.

This leads us to the third indication which we have to meet, in order to obtain in these subjects of dilatation, intestinal antisepsis.

In the great dilatations of the stomach, lavage of the stomach is obligatory, and this especially when the substances contained in the stomach have a tendency to putridity. I need not here dwell on the manner of performing lavage of the stomach, which I have treated quite fully in my "Diseases of the Stomach and Intestines," and in "New Medications."

The alkaline waters are generally employed for these lavages; when there is putridity, you can make use of antiseptic solutions, either of boric acid, 10 per 1000, or naphthol α, 1 per 1000.

These same lavages, applied now to the large intestine, are indicated, as I have already said, in two circumstances; when there is putrid diarrhœa, or when there is dilatation of the large intestine, with accumulation of gas and fæcal matters. Cantani has given to this therapeutic method the name of *enteroclysm;* the best method of practising enteroclysm consists in employing the Debove tube furnished with its funnel. Introduce, as high up as possible into the rectum the semi-rigid part of the tube, fill the funnel with the medicinal solution, and, according to the height, you will augment the force and rapidity of penetration of the liquid introduced into the large intestine.

If you cannot obtain a stomach siphon, you can make use of a large irrigator or fountain-syringe, furnished with a long rectal canula. The quantity of liquid should not be less than a quart; as for the solution to employ, you can use tepid water, or, when the putrescence is very marked, water containing a little naphthol or boric acid. Dissolve 1 gramme (15 grains) of naphthol α in a quart of water, or use a one or two per cent. solution of boric acid. Every morning the patient should wash out the lower bowel with this solution.

The final indication under this head is to regulate the diet. This matter of dietetic regimen is of great importance, for thereby we may hope to combat both the intestinal putridity and the dilatation.

Three things are to be avoided by persons with dilated stomachs,—first of all, liquids, and, in general, articles of food in a liquid or semi-liquid state; then multiplicity of meals; and, lastly, aliments which may furnish ptomaïnes in too great abundance to the economy.

Subjects of gastrectasia support liquids badly, and Chomel a long time ago gave to these particular digestive ailments the name of dyspepsia of liquids. Put your patients, then, on a dry diet, allowing them not more than half a pint of drink with breakfast and dinner, no liquid (if possible) to be taken between meals.

What shall the drink be? Plain water in preference to the gaseous waters, which are badly supported. As for the alkaline waters, the least gaseous should be selected, and when Vichy or Vals is drunk with meals, the bottle should be uncorked some time beforehand in order to allow the excess of carbonic acid to escape. As for wines, a light white wine should be chosen, like those of Central France. Pure wine and spirits should be eschewed.

In speaking of wine, there is a medicinal wine which should be interdicted; I refer to wine of quinine. There are many physicians who have the habit of ordering quinine wine in all states of enfeeblement, without informing themselves beforehand of the state of the stomach; it is a bad habit, and deplorable in its consequences. Quinine wine increases the digestive troubles in persons with dilated stomachs, and thus aggravates their condition. Hence you should be pretty sure of the integrity of your patients' stomachs when you prescribe it.

As before said, the patient is forbidden to drink between meals; is to take no tea or coffee, and is forbidden soup; the latter, however, may be permitted if made thick.

Quite as important is the prescription of the hours of meals. The slowness with which in persons with dilated stomachs alimentary substances pass from the stomach to the intestine, makes it imperative that there should be a long interval between meals, so that when food is taken it may find the stomach empty, or nearly so. There should be seven hours between breakfast and dinner, and the patient should not be allowed to eat between these meals.

You know well that in polite society it is customary, between breakfast and dinner, to have tea at about five o'clock in the afternoon, when a light meal is taken; this is a custom borrowed from England and the United States, and must be given up by those that have dilated stomachs.

You may lay down the rules for meals as follows:

A light breakfast at seven o'clock; a second at 11.30 A.M.; and dinner at seven in the evening. Many persons can well dispense with the first breakfast, and in that case will take but two meals a day,—the one at 10 A.M., and the other at 7 P.M.

As for the kinds of food to be chosen, it is desirable to avoid the introduction of all alimentary substances capable of furnishing too great a quantity of toxines, and, in starting from this principle, you will have to prohibit, in the first place, game, then fish, which too rapidly spoils, also shell-fish and crustaceans and old cheese. In giving directions with regard to meats, you will insist that they shall be well cooked; cooking, in fact, opposes to a certain extent the production of cadaveric alkaloids. Hence, instead of ordering rare-done meats, or meats scarcely cooked at all, you will prescribe meats thoroughly stewed, boiled, or broiled, beef *à la mode*, calf's jelly, broiled or roast fowl well seasoned, stewed chicken, etc.

But it is in these cases that the vegetarian regimen suits admirably. Vegetarianism is destined to have a rather important *rôle* in the treatment of affections of the stomach, and therefore I propose to devote an entire lecture to this subject. Let it be sufficient for my present purpose to advise you to prescribe for your patients a diet largely of eggs, cereals, green vegetables, and fruits.

I come now to the mechanical means which may be used to combat dilatation of the stomach. These mechanical means are of three orders,—abdominal belts, massage, and electricity.

In the theory of enteroptosis, abdominal supporters play a considerable part, hence Glenard places them at the head of his therapeutic measures, and he recommends an abdominal belt, which he calls *sangle pelvienne*, of which he gives a detailed description in his exposition of the treatment of enteroptosis (*Lyon Médical*, June 26, 1887). From this description I borrow the following details:

Glenard's *sangle* is a belt of elastic webbing, twelve centimetres (five inches) in width, and from sixty-eight to seventy-five centimetres (twenty-seven to thirty inches) in length. To one of the extremities are attached three parallel bands of elastic material four and a half centimetres (about two inches) in width, and thirty-one centimetres (twelve inches) in length. To the other extremity are sewed three buckles, each five centimetres (two inches) in width, and placed side by side. Perineal straps fix this belt to the inferior part of the abdomen, so that it is placed just above the pubes, and its upper border does not extend above the crest of the ilium more than a finger's breadth.

The figure which I here show you indicates how this pelvic girth should be constructed, and if I insist upon all these details, it is because it is difficult in Paris to obtain a belt of the kind rigorously made according to the directions of Glenard. (Fig. 3.)

This supporter, which is especially applicable to subjects of dilated stomachs, with an abdomen lean and excavated, often gives patients considerable relief. Glenard insists that the relief thus obtained is a proof that his theory is right. I believe, with Bouchard, that the benefit derived from Glenard's supporter is due to the fact that the tractions on the dilated stomach are lessened thereby, whatever may be the theory adopted to explain this dilatation.

The other mechanical means for the relief of dilatation of the stomach is massage. You see massage performed every day in my hospital by one of my pupils, Dr. Hirschberg, of Odessa, who has published in his inaugural thesis, and in the *Bulletin Général de Thérapeutique*, the principal results thereby obtained.*

I refer you to these memoirs, where you will find described with great care the method to be employed in practising massage, only reminding you that it comprehends two parts,—the massage of the muscles of the abdomen

* Hirschberg, *Thèse de Paris*, 1889, and *Bulletin de Thérapeutique*, September 30, 1887, and September 30, 1889.

and massage of the stomach. In performing the first, you make light passes over the oblique muscles, followed by a few slow and superficial kneadings and some strokes with the side of the hand; then you proceed to massage of the stomach. After having well marked out the stomach, you produce with the palm of one hand, or of both hands, pressures at first light, then stronger and stronger, going from the greater curvature of the stomach to the pylorus; then you endeavor to grasp the stomach and knead it, always aiming to press the alimentary mass towards the pylorus; the *séance*, which should not last more than half an hour, is terminated by massage of the intestine, and especially of the colon.

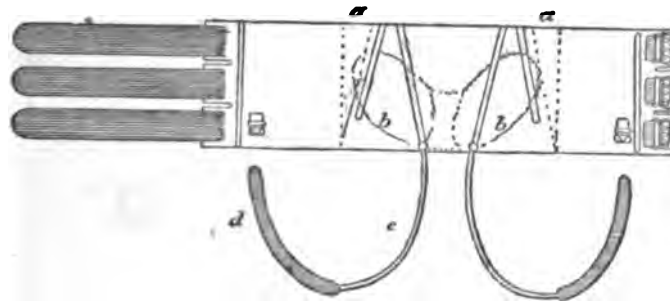
In stomachs that are very much dilated, and especially in the constipated, this practice of massage of the abdomen is excellent, not because it acts directly on the dilatation or much diminishes the extent of it, but because it provokes the contractions of the stomach and of the intestine, and thus opposes the too prolonged sojourn of aliments in the digestive tube.

I shall say but little of the employment of electricity. Although of late electrotherapeutists have proposed anew the electrization of the stomach, the attempts which we have made have given us only results which were so uncertain that we have abandoned the method.

Moreover, if I believe that we may combat efficaciously the disorders which are the consequence of dilatation of the stomach, I have little faith in the possibility of curing the dilatation itself, for it is difficult to restore to its natural dimensions a stomach that has been distended for many years, and this would be possible only by a line of treatment which is quite out of the question,—namely, by absolute abstinence. We see, in fact, in persons affected with stricture of the œsophagus or cancer of the cardia, the stomach, and the entire intestinal mass atrophied to such a point that they henceforth occupy a scarcely appreciable place in the abdomen.

But I do not think that by acting directly on the muscular fibres of the stomach, whether by massage or by electricity, we can bring about such contractions of the muscular coat that these can cause the gastrectasia to disappear. This is why you have not seen me prescribe the tetanizing medicines so called, such as strychnine and its derivatives, —Baume's bitter drops, for instance, which I see so often ordered in these cases. To obtain from these tetanizing medicaments real effects on the muscular coat of the stomach and intestines, it would be necessary to administer them in such doses that there would be more danger than profit therefrom.

FIG. 3.



Sangle pelvienne of Glenard.

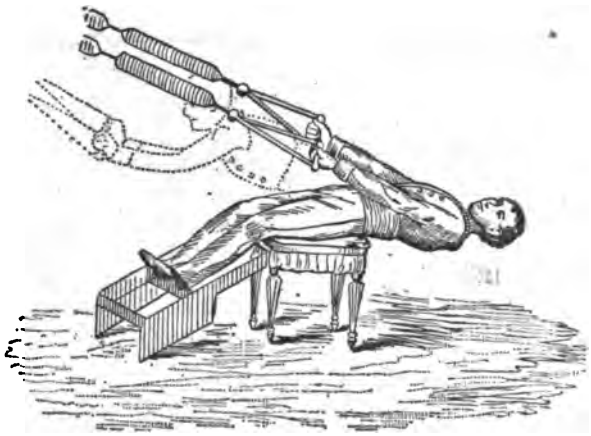
It remains for me to speak of the general tonic treatment that should be employed in cases of dilated stomach. Under this head hydrotherapy and muscular exercises play a considerable part. They act by stimulating the entire organism, and by diminishing the excitability of the nervous system. You can employ all the procedures of hydrotherapy, and, in particular, the cold douches, which should be very short, rules for the administration of which you will find in my "Hygienic Therapeutics."*

All the muscular exercises are also indicated. You will, of course, adapt them to the occupations and to the sex of the patients; but I would especially recommend you to employ those exercises which the patient can practise at home by the help of opposition gymnastics. The patient, seated in a chair, with the feet resting on a stool fixed to the

* *Vide* THERAPEUTIC GAZETTE, January 16, 1888, p. 1.

floor, exercises tractions on some elastic spiral springs attached to the upper part of the wall of the room. These movements cause flexions and extensions of the trunk on the pelvis, exercises which promote the descent of the fæcal mass in the intestines, and of alimentary matters in the stomach. (Fig. 4.)

FIG. 4.



Abdominal gymnastics (Pichery).

Are the mineral waters beneficial in the treatment of these patients whose stomachs lack equilibration? Glenard extols Vichy and sends patients to the springs Grande-Grille and Hôpital, the water to be drunk on the spot. I believe that it is necessary to be very prudent in this regard. Nevertheless, I recognize the fact that in gastrectasia with congestion of the liver (a very common conjunction), and with sour stools, the waters of Vichy are beneficial, but ordinarily hydrotherapy judiciously applied may suffice.

Such, gentlemen, is the aggregate of therapeutic means which you may put in execution in the treatment of gastric neurasthenia. I may sum them up in the following brief rules, which you may lay down when you have patients thus affected:

1. The patient may take with each meal 5 grains each of salicylate of bismuth, magnesia, and bicarbonate of sodium in capsule.

2. He may take on going to bed a dessert-spoonful of the compound licorice powder (for formula, see above).

3. Every day he may have a cold-jet douche, applied along the vertebral column. The duration of the douche should not exceed fifteen seconds (if the patient be a lady, douche the feet with warm water); energetic dry friction with a flesh-brush after the douche.

4. Walks in the open air, muscular exercises (opposition gymnastics, fencing, etc.) are beneficial.

5. Pursue with rigorousness the following dietetic regimen: Let there be seven hours at least between the two principal meals. If the patient takes three meals a day, the first should be had at 7.30 A.M., the second at 11 A.M., the third at 7.30 P.M. If two meals only should be eaten, let the first be at 10 A.M., and the second at 7 P.M. Never to eat or drink between meals.

Let the diet consist largely of eggs, cereals, starchy foods generally, green vegetables, and fruits.

a. The eggs to be but little cooked (creams, custards).

b. The starchy foods to be thoroughly cooked (mashed potatoes, stewed beans, lentils, revalescière, racahout, lactated farina, panada, rice in all its forms, macaroni, biscuits, buns, hominy, oatmeal, etc.).

c. The vegetables should also be well cooked (boiled, mashed carrots, turnips, peas, cooked salads, spinach, etc.).

d. The fruits should be stewed, with the exception of strawberries and grapes.

Use toasted bread instead of plain bread. Eschew from the dietary, game, fish, mollusks, crustaceans, old cheese, as well as liquid foods, and soups that are too thin.

To be permitted: soups that have been thickened, gruels of various cereals, wheat, rice, Indian corn, etc.

As for drinks, take only a tumblerful and a half of a mixture of light white wine with ordinary water or Alet water; no gaseous

waters; no pure wine; no whiskey nor other distilled liquid.

You see the important part played by diet, and especially the vegetarian diet, in the treatment of gastrectasia. This is a subject which needs to be developed with fulness, and this is what I propose to do in the next lecture, but I hope that I have shown you in this lecture what precious resources are at our command in the management of these cases, so numerous at the present day, of neurasthenia with dilatation of the stomach.

NOTE.—In the article "On New Analgesics," in the December number of the THERAPEUTIC GAZETTE, the last paragraph pertaining to the uses of acetanilide was unavoidably omitted.

"The elective action of acetanilide is seen chiefly in diseases of the spinal cord attended with pain. Thus, in the *douleurs fulgurantes* of tabes dorsalis, excellent results have been obtained. I possess a great number of observations of locomotor ataxia where no other medicine gave relief, and where the lightning pains disappeared as if by magic under the influence of 7 or 8 grains of acetanilide administered eight hours apart.

"I have even gone further, and maintained that in certain cases of epilepsy this medicine may be curative. I have notes of three cases of epilepsy which have been treated for eight months by this remedy; these patients have now had no return of their fits for three years. Along with this success I have, however, had numerous failures, and the number of the latter is such that it may be affirmed that it is only exceptionally that acetanilide can cure true epilepsy. At the same time, I always advise epileptic patients who cannot be cured by or cannot take bromide, to make a trial of acetanilide."

TWO OR THREE STRONG, PRACTICAL THERAPEUTIC POINTS OF EVERY-DAY APPLICATION.

BY HENRY M. FIELD, M.D., NEWTON, MASS.*

A PERSONAL and clinical experience, in consultation and otherwise, within a brief period of three weeks, has made me feel the necessity of accentuating information upon the use and abuse of two powerful drugs in constant employment by the profession. A third point will be made later, in a different direction, if time and space allow.

1. As to *digitalis*. Any one who has studied attentively Fothergill's prize essay upon this material, and who, for many years later, has tested the correctness of the writer's conclusions, by an almost daily use of the remedy in his practice, must, as I believe, pronounce this masterly monograph indeed *magnum opus*, —a treatise more consistent and convincing, as viewed from a physiological, philosophical, clinical stand-point, than any other monograph yet published, devoted to the discussion of whatever remedy.

After such instruction, and supported by such subsequent experience, the practitioner may assert with confidence, however eminent the position of the authority whom he antagonizes, *digitalis never does, digitalis cannot, exert "a fourth stage of action,"* under conditions of largely toxic dose.

Its influence is of necessity, and is invariably, along one line,—from the point of physiological action brought to bear upon a weak heart, with result of energized systole, to that point where a veritable cardiac contracture is produced.† It is no more possible to establish a condition suggestive of cardiac paralysis in diastole, by largely toxic doses of digitalis, than it is possible to energize heart-action by a rightly proportioned dose of aconite. Any one who has seen, as has the writer, the tetanized heart and "cordy pulse" following upon the ingestion of 2 drachms tr. digitalis leaf, and has further witnessed the speedy and progressive relief afforded upon exhibition of an (otherwise) toxic dose of aconite, has had in striking form the demonstration which a more attentive clinical study of digitalis in its frequent medicinal use would less strikingly establish.

And now for the more practical point, which the foregoing discussion may serve to introduce. I make the broad statement, after long and due consideration,—a statement as true as it is deplorable,—to wit, that many authorities, giving instruction either by text-book, by lecture, or posological tables, exaggerate the dose of digitalis. First of all, it may be said that, for cardiac conditions indicating this drug, whether neurotic or struct-

* Professor of Therapeutics, Dartmouth College.

† Just as surely as aconite acts along one line, but in an opposite direction,—from the status produced by its calmative influence upon the too sthenic heart to that which is represented by paralysis in diastole and which brings death.

ural, we have in a concentrated tr. of digitalis leaf the one trustworthy, pharmaceutical preparation of the drug; and, second, the cases and conditions are few and seldom met with that will bear a larger diurnal dose than 15 drops of such tincture,—*i.e.*, 5 drops after each meal. Press the remedy further, and pretty surely evidence will be presented of a tetanized heart, although perhaps in slight degree.

Within the present week the writer was called in consultation by a competent physician,—a recent graduate of one of the oldest and most eminent medical colleges of our country. His patient evidently required digitalis, and the doctor was *feeding* it to her,—10 drops every two or three hours! My advice was emphatic. Let your patient have time to recover from digitalis-poisoning, and then give 5 drops three times (or, at the most, four times) in the twenty-four hours. The young physician reported to me twenty-four hours later, with radiant face, the satisfactory change set up in his patient, pursuant to the change of dosage; but added: "And yet I can show you, doctor, from my note-book, that the method I was pursuing in my use of digitalis was strictly in accordance with the instruction I received from our professor of therapeutics at —— University."

This is the melancholy fact of my recent experience. Not that a young physician was unfamiliar with digitalis posology, but that he had been misinstructed by one who holds a position of eminence and authority in one of our foremost medical colleges.

Permit a final remark. The chief experience of the writer in the use of the drug under discussion is, as applied to the subject of a "weak and irritable heart," caused, it may be, by various excesses, but most often encountered in those of full adult age, and who have long been overpressed, overburdened by business responsibilities. Few other results in practical therapeutics are so sure to be satisfactory as those which follow an application of digitalis in cases of this description; but success rests upon attention to three inevitable conditions,—viz., reform, so far as possible, in the fault which produced the cardiac difficulty; a systematic regular ingestion of the tincture, t. i. d., for months together; and, finally, a proper adaptation of doses. As respects the last specification, it must be added that digitalis *is not cumulative*. The system responds to its influence as freely and promptly after three months' use as it did at first; and, in a large and long experience, I can hardly recall the case that required a larger dose than 5 drops; and this, however long the remedy was continuously employed. On the other hand, I have memoranda of a few well-marked, unmistakable cases, where, by virtue of idiosyncrasy, even 5 drops proved too large a dose, while the 3- or 4-drop dose promptly met the individual indication.

2. As to the use of the active principle of *nux vomica*. It has, for many years, been an axiom with me, in my discussion of this drug before the medical class, *never use strychnine!* And, when universal and interested attention was secured by the utterance of a statement so paradoxical, the assertion was repeated with renewed force, but with the explanation, or corollary, *never use the alkaloid, but use the salt!* If I mistake not, no other alkaloid is so insoluble as that of nux vomica. Water hardly affects its solution in ratio of 1 to 5000; whereas a salt, the sulphate of strychnine for example, is soluble as 1 to 10.

It is true that alkaloidal strychnine may find acid in the stomach which should effect its solution; but one of the most frequent exhibitions of this powerful remedy, on the part of the general practitioner, is to meet an indication of apepsia. Here the *larger doses* alone are effective. At the same time that we cannot safely trust either to the presence of the gastric juice, or of gastric energy, in quantity and degree sufficient to procure the digestion and appropriation of the potent drug administered. All at once is set up signs of cumulative action,—symptoms of strychnine-poisoning; whereas a soluble strychnine—the sulphate of strychnine—can be given in any dose and repeated with whatever frequency the judgment of the skilled physician may determine, with assurance of due and complete elimination after its therapeutic service has been accomplished.

Such having been my teaching and my intended practice, corresponding to the rational basis of one and the other thus briefly sketched, for many years, I have seldom found so great occasion for self-reproach as that which was afforded by a discovery within the past fortnight that certain of the largest, most reputable manufacturing pharmacists of the country had long provided the medical practitioner with pharmaceutic products calculated to antagonize exactly that which I have taught and that which I supposed I had done in behalf of my patients. The grave error to which reference is made presents a double fault and

also a strange inconsistency; for while salts of strychnine were minimized to an extent as if with purpose to play into the hands of homœopathy (*i.e.*, parvules of the strychnine salt being manufactured of range from the $\frac{1}{200}$ to the $\frac{1}{100}$ grain, and at this point a stand was made), the insoluble, the alkaloid strychnine, was given to the profession in parvules of strength as great as the $\frac{1}{50}$ grain!

It is greatly to the credit of, perhaps, the largest and most influential drug-house in New York City that, attention having been called to this error by recent investigations, the promise is given that henceforth alkaloidal strychnine shall be stricken from their sale lists; and that parvules of varied strength, calculated to meet the wants of the practitioner, shall contain strychnine *only in the form of salt.*

The benefit which certain eminent houses, like the one to which reference has just been made (and which require not mention by name), have conferred upon the medical profession, whether as represented by the metropolitan physician or the physician who is forced largely to carry his own remedies, and whose field of labor is in remoter districts, has not received the recognition deserved; shall we be obliged to confess that such benefit extends even to an occasional education of our profession in some prominent point of practical therapeutics, in default of previous education in the medical school or through the communications of standard text-books (as in the point just made)?

Our third point shall be discussed in very few words. In a transcontinental journey, made by the writer two winters ago, the little and elegant aperient parvule, containing $\frac{1}{8}$ grain ext. bellad., $\frac{1}{60}$ grain strychn., and $\frac{1}{4}$ grain aloin was found, so far as inquiry was made, in every city and town large enough to support a drug-store, from Boston to Los Angeles. The universal distribution of this parvule, its universal acceptance by the profession, afford evidence enough of its value; and yet it is an object of fair, adverse criticism in three particulars, corresponding to the three elements which enter its composition.

1. $\frac{1}{4}$ grain aloin is hardly effective, even as aperient, in the average subject of constipation; in the majority of cases observed, the parvule must be repeated once or twice before an evacuation of the bowels is secured. Again, the ext. bellad. has such strength, as nowadays prepared by the competent pharmacist, that $\frac{1}{8}$ grain, repeated two to three times in the course of twelve to eighteen hours, will pretty surely occasion an uncomfortable degree of physiological impression; and an emphatic physiological impression of belladonna should always be spared the patient, if possible. What syndrome of drug symptoms is more uncomfortable than the dry throat, the foul taste of mouth, the flushed face, which belladonna is so prompt to produce, and to which may be superadded dilatation of pupil and disorder of vision. What other drug is so likely to cause a measure of toxic action within the range of medicinal dosage!

Finally, the strychnine of our parvule is, supposably, designed to energize peristalsis; but will $\frac{1}{60}$ grain of strychnine, given by mouth, effect this purpose? "I trow not."

Permit a preliminary remark, prior to the introduction of the formula I am about to propose, and I am done. Rutherford, etc., have shown in their physiological experiments that ipecac, in quantity from half a grain and upward, exerts somewhat of a cholagogue action.

After consultation with one or two neighboring practitioners and with our local drug firm, a small pill (or moderately large parvule) has been manufactured which both meets the criticism made to the parvule, and (I believe) will meet the indications of daily practice. This is the formula:

℞ Aloin, gr. $\frac{1}{8}$;
Strychn. sulph., gr. $\frac{1}{50}$;
Ext. belladon., gr. $\frac{1}{10}$;
Pulv. ipecac., gr. $\frac{1}{2}$. M.
Pil. No. 1 ft.

Now, generally, one such pill will be sufficient, acting within the range of aperient influence; but if it has to be repeated at the end of five to eight hours, the patient escapes the noxious belladonna impression, and, it goes without saying, is safe as respects the strychnine.

The obvious remark may be added that $\frac{1}{50}$ grain sulphate of strychnine, repeated once or twice, would hardly be consistent with safe practice in the quite young subject; but in the adult patient—the patient of 18 years and upward—certainly three of the proposed pills could be taken within the limit of twenty-four hours with absolute security so far as the strychnine is concerned; at the same time such repetition, it is believed, will not often be demanded; and, again, it is the adult subject who will generally require this pill.

HISTORICAL, CRITICAL, AND SCIENTIFIC ASPECTS OF BROWN-SÉQUARD'S DISCOVERY—THE SO-CALLED "ELIXIR."

By G. Archie Stockwell, M.D., F.Z.S., Detroit, Michigan.*

(Concluded from vol. v. p. 819.)

The results obtained have been of a sufficiently positive nature to warrant the supposition that spermine is the true factor in inducing the physiological phenomena chronicled by M. Brown-Séquard; and unless some should imagine, as has frequently been stated, that these results accrue solely to the presence of phosphorus compounds, it may here be stated that all traces of these, in each instance, were carefully eliminated in the preparation of spermine, though sometimes with considerable difficulty; further, control experiments with phosphates induced no parallelisms.

Administration in doses of .0016 gramme to cats, small dogs, and rabbits—a large warren of the latter being placed at my disposal by Mr. F. Weber—invariably induced powerful and prolonged stimulation of the sympathetic nervous system, most strongly manifested through the spermatic plexus. Manifestly it stimulates the vaso-motor centre, increases blood-pressure, and aids oxidation. In toxic doses it induces distressing tetanic spasm, and interferes with respiration by spasmodic fixation of muscles, including the diaphragm. Sometimes was manifested considerable cutaneous hyperæsthesia, from even moderate doses, and in general increased muscular, and perhaps mental, activity. While under its influence, pressure upon the lower lumbar area in the region of the genito-spinal centre, caused the induced sexual orgasm to culminate in emission. In almost every instance the natural salacity of male rabbits was greatly increased, the individual passing from female to female almost without intermission, until the latter refused to accept further embraces. One that succumbed to tetanic spasms induced by an overdose, first exhibited a condition of priapism that led to copulation, though without culminating in emissio seminis, as judged from lack of the epileptiform spasm that usually marks the climax of the act; the creature died, apparently, in great agony, the intromittant organ remaining without the cloaca in a state of erection to the last, and even for some little time after death. A female rabbit which had long been supposed sterile from age, after several injections of .0008 gramme, rapidly improved in strength and flesh, and ultimately conceived, though the latter result was doubtless due to introduction to a young, vigorous, and strange male, rather than the salt.

In one aged feline the vital powers were so far stimulated as to secure, within seventy hours after the third injection, the healing of a hitherto intractable suppurating maxillary sinus of more than two years' standing. In an old stallion, also, a like result accrued to an abscess and sinus of the shoulder; and likewise was induced prolonged erethism with almost maniacal sexual furor,—this from one-half grain of spermine muriate.

Experiments made upon human beings in varying conditions of health, and guarded by careful control injections, were in the main satisfactory,—sufficiently so at least to warrant further investigation and experimentation. Individuals of good habit, whose indispositions were of minor importance and due to overcharged conditions of the economy, were not benefited, but, on the contrary, in several instances severe hemicrania was induced. These are, therefore, excluded from further consideration.

In truly morbid conditions the results were by no means uniform in each case. Sufferers from chronic organic diseases, such as are at best only amenable to palliative treatment, sometimes obtained temporary relief. Others, suffering from nervous maladies, like neuralgias and other reflexes, and from ovaritis, anæmia, and lack of economic tone and vigor, in the ratio of seventy per cent., exhibited more or less definitely the physiological effects claimed by Brown-Séquard. In one instance, one grain of spermine hydrochlorate, the largest amount employed, developed brief clonic spasms of the muscles of the extremities, very painful in the calves of the legs and plantar region of the feet. In ten per cent. of the cases the accruing results were manifestly spurious,—due to "suggestion," or suspicions; in twenty per cent. wholly negative.

The stimulation obtained in man, from six to sixty-eight hours, with an average of perhaps thirty-six hours; in dogs, from $\frac{1}{40}$ grain of hydrochlorate to each ten pounds, and fraction thereof in weight, erotic mania persisted for from four to twelve hours; in rabbits erethism was more fleeting, probably because it could be sexually satisfied, but the epileptiform spasms, such as are invariably

* Member of the New Sydenham Society, Lond.

manifested with the culmination of coitus, were very much heightened, with occasionally momentary insensibility. In some cases also, as the effects wore off, in human and animals alike, there was manifest lassitude, even depression. Time and space will not permit of individual details of personal cases, but my limited experience with human beings tallies closely with the extended experience of Dr. H. C. Brainerd, of Cleveland, who, in a synopsis of two hundred experiments, kindly placed at my disposal, summarizes as follows:

"The patients that received no benefit were, foremost, the class of organic and structural diseases and decrepitudes. Next, people of plethoric habit and good assimilation, abundance of blood, and who carry the evidence of living well and easily.

"The cases most immediately and permanently benefited were professional or business men of middle age, with capable, active minds, but physically feeble, comparatively free from organic disease, yet possessing but slight recuperative power, and quickly suffering weariness and fatigue.

"Specific maladies benefited were: *Hemiplegia* to the extent of dragging one arm and leg; four cases were very much improved by continuous treatments, and in two others benefit was not attained until after the fourth injection. Three cases of *locomotor ataxia* show the most pronounced and continuously progressive benefit of any of the experiments; one who walked with extreme difficulty received thirteen injections, and can now walk *straight*, with his *eyes shut*. Of five cases of *muscular rheumatism*, all were benefited; the greater the suffering and difficulty in using the limb, the more pronounced the good results. Of four cases of *sciatica*, two, suffering intense pain, obtained complete relief, and there was decided improvement in all. Of two cases of *lumbago*, relief was not so great as in other forms of rheumatism.

"In seven cases of *impotence*, those that resulted from mental work and worry were benefited, while those due to continued abuse and excesses exhibited but little improvement.

"Cases of *insomnia* caused by overtaxed mental conditions, *hypochondria*, *melancholia*, *mental depression*, *feeble heart* without valvular disease, *cardiac asthma*, *spinal irritation*, partial paralysis of neck of bladder, and cystic neuralgia, all were surely benefited.

"Two of the cases of sciatica were using morphine hypodermatically (one, from three to five times daily), and both *report* relief from the habit. Two other cases, however, received not the least benefit. Three business-men who had contracted a habit of taking from two to five drinks of whiskey per day 'to brace up on,' were enabled to stop it. One reported that not only had he lost the craving, but spirits now affected him as they would one not accustomed thereto.

"While the treatment fails in a per cent. of seemingly amenable cases, yet in a large number it produces an amount of relief and benefit as pronounced as that induced by any other remedy or means, and in some cases the relief or improvement is startlingly apparent and agreeable."

Also Dr. H. P. Loomis, of New York, after experiments upon a number of cases,* concludes that the injections do, "as claimed, produce nutritive modifications in the tissues of elderly men, due probably to stimulation of the nerve-centres." And he adds: "As far as my own experiments are concerned, sufficient time has not elapsed to justify either an affirmation or denial of Dr. Brown-Séquard's second conclusion.† There is, however, in the theory sufficient ground for further experimentation." Dr. Loomis also calls attention to the fact that the fluid of Brown-Séquard should be employed with "extreme caution," and that it is far from safe to proceed upon the belief "if it does no good it can do no harm."

In my individual experiences the most notable phenomena were manifested in the persons of:

1. A negro, aged 72 years, a confirmed alcoholic and supposed sufferer from chronic rheumatism, who was led to believe the injections were intended solely to relieve his inordinate craving for spirits.

2. A lady, aged 39, "run down" through physical and nervous prostration induced by overwork and mental strain, supplemented by a severe attack of pelvic cellulitis; digestion and assimilation were sadly defective; here the injections were supposed to be for the purpose of promoting the absorption of a fatty tumor.

In the former, the first injection of spermine muriate was wholly negative. A second, twenty-four hours later, induced a rise of temperature, increased cardiac action, slight general stimulation, with momentary dizziness, and a feeling of buoyancy and exhilara-

* *Medical Record*, August 24, 1889.

† "That the alterations in muscular structure not essentially allied to old age may disappear, and a consequent recovery of former power by the tissues may supervene."

tion, all of which disappeared after a brief period. A third, after a like interval, much to his surprise, afforded complete relief from pain, and a long, unaccustomed suppleness was developed; during the next three days he could climb on and off a street-car as nimbly as any one, though heretofore complete stoppage and delay of the vehicle for some seconds had been necessitated. As the effects wore off, he again resorted to his accustomed stimulants, and engaged in a debauch that lasted for a fortnight. He then returned, and besought the injections might be renewed, for the purpose of enabling him to "sober up and sw'ar off." One-fourth of a grain of the salt certainly seemed most efficacious in this respect, though it is not improbable the effect was more moral than dynamic. At this writing he is free from pain and otherwise materially benefited, and continues to receive injections twice or three times a week. He no longer complains of "rheumatism," which, after all, was mere muscular stiffness, resultant upon exposure, excesses, ill nourishment, and irregular habits. Appetite is better than at any time for years, he asserts, and this is borne out by increased flesh, and a more sleek condition of skin and hair.

In the second case, the patient had been aspirated for the relief of her pelvic cellulitis, but, after a trifling gain enabling her to be about the house, was at a stand-still, so far as improvement was concerned, and melancholic. She suffered constantly from extremes, being either intensely constipated or dysenteric. After the fourth injection of spermine, one-eighth grain, she picked up rapidly; the bowels gradually assumed a normal condition; there is increased muscular and nerve vitality, excellent appetite, and assimilation, freedom from pain, absence of melancholia, and loss of the peculiar cachectic, drawn, care-worn appearance. Moreover, the menses have reappeared after an interval of three years, and are no longer characterized by the agony of a dysmenorrhœa, as was formerly the case. The results have been most surprising, it must be admitted. On numerous occasions camphor-water alone, instead of a solution of spermine in this fluid, was substituted, but in each instance the omission of the salt resulted in return of unpleasant symptoms, first manifested by derangement of stomach and bowels. While the injections were at first given daily, they were subsequently decreased in strength, then omitted every other day, and later employed only thrice, twice, or once a week, as occasion seemed to demand; and for some time they have been entirely suspended, and she has now gone into a shop where she performs the arduous duties of cloak-fitter and mantua-maker. No other medication was employed, except an occasional glass of Hunyadi-water, and she attributes her recuperation wholly to the latter. It is, perhaps, needless to remark her steatoma remains undiminished.

Three cases of anæmia with endometritis, and another with profuse metrorrhagia, were decidedly benefited, the latter culminating in cure with the spontaneous expulsion of a hydatid mass. In this case the spermine muriate appeared to act as an ecbolic, undoubtedly reflexedly by stimulation of the genito-spinal centre.

The foregoing I do not claim to be of absolute material value, but as evidence of the necessity for further study and experimentation. In spite of the careful control exercised, there is still room for suspicion of either coincidence, or, perhaps, *suggestion*. It may likewise be surmised that spermine is very far from offering the advantages of a universal panacea, or from being entitled to any such designation as "Elixir of Youth" or "Elixir of Life;" and from the results obtained in lower animals it is patent that it may prove equally as potent for evil as good. That its action is in many respects closely allied to strychnine, is alike evident and suggestive.

However, there are reasons for surmising, if it can be obtained in an unobjectionable way,—one that will not offend the æsthetic sensibilities of medical men and their patrons, as from spinal cords, roe of fishes (sturgeon offal is very rich therein), or by synthesis,—in quantities sufficient to supply the market at a fairly reasonable rate, that it may prove a desirable adjunct to our materia medica and *armamentarium therapeuticum*. In any event, it should not be deemed more objectionable than *propylamin*, which was at one time obtained from the accumulations of water-closets, or *pepsin*, as had from the stomach of filthy, omnivorous swine.

Regarding the irresponsible experiments undertaken, or professedly undertaken, as chronicled by the general secular press, it may be remarked that the greater number afford conclusive evidence, *per se*, of their spurious or unreliable character. It may be believed, also, that more than one case of dangerous septicæmia has developed from

such measures, since ignorance of the methods of preparing the fluid, as employed by Brown-Séquard, and of eliminating effete and dangerous products, is virtually self-confessed by the operators. The crude glandular products, under any and all circumstances, constitute a fluid of extreme instability, and tend to rapid decomposition, a process that is furthered and enhanced by the almost unavoidable admixture of blood serum. Unless obtained before,* or immediately upon the death of the animal, and rapidly prepared by filtration, with strict attention to antiseptic details, its employment is prone to be attended with most disastrous consequences, and even under all precautions it is not to be deemed absolutely safe unless the preparation is carefully examined to insure, beyond all possibility of error, exclusion of bacterial products.

No such objections obtain to the alkaloid or its salts, however, as their manufacture necessitates exposure to both boiling-water and hot alcohol, precluding the survival of septic products.

In conclusion, a few queries and comments referring to the foregoing syllogism may be both pertinent and suggestive.

1. *Why do men and lower animals that are continent display excessive energy?*

"Who is ignorant of the fact that the semen, reabsorbed into the animal economy augments in an astonishing degree the corporeal and mental forces? This powerful vital stimulant animates the whole economy, and places it in a state of exaltation and orgasm; renders it in some sort more capable of thinking and acting with ascendancy, with a superiority, as we readily observe among animals in the rutting season."† Seminal products contribute so much to courage and vigor that the *athletæ* and gladiators of Greece and Rome were forbidden sexual intercourse lest their *condition* should thereby be impaired, and strict chastity and continence for like cause was recommended to warriors. Moses commanded that in time of warlike activity the Israelites should not approach their wives. Sir Wm. Acton, M.R.C.S., says, "I am now disposed to think that semen, after it has been secreted by the testes, must be taken up again and carried into the general circulation, there to produce the effects on the system that are only noticed in men and animals who enjoy virility."‡ And again: "Admitting, then, as I now do, the reabsorption of semen, I am disposed to agree with Haller, that 'the greater part is pumped back into the blood, and there produces, as soon as it reaches the circulation, changes most marvellous,—the beard, the hair, the horn. It alters the voice and manners, for age does not produce these changes in animals. It is the seminal fluid alone which can affect this, as we never remark these changes in eunuchs" ("Primæ Lineæ Physiol.," p. 790).§ It is well known that stallions are capable of undergoing more work than geldings, and it is an old saying in Scotland that in draught the former is "equal to one gelding and a half." Also any one who has travelled in France and the Low Countries must be aware that stallions are there used by preference for all draught purposes; and for like reasons the cab companies of London prefer mares, because geldings (stallions being apt to be intractable) are unequal to the work (thirty miles a day) required.

2. *Why do individuals developing the greatest mental or physical activity exhibit, in proportion thereto, a corresponding decrease of sexual ardor?*

"They do best," says Bacon, "who, if they cannot but admit love, yet make it keep quarter, and sever it wholly from their serious affairs and actions of life; for if it check once with business, it troubleth men's fortunes, and maketh men that they can no ways be true to their own ends." It is an undoubted fact that we meet with a large

* Dr. H. C. Brainerd thus outlines the method of preparation as employed by himself:

"The fluid is taken from the glands of a young, healthy ram, which has been kept isolated for at least twenty-four hours and carefully fed. Allowing the theory of reabsorption, the spermatic veins and vas deferens are first carefully ligated as far from the testicle as practical before removal, all without sacrificing the life of the animal. After removal, the fluid contents of the spermatic veins are carefully expressed, the epididymis and vas deferens relieved of their retained semen (which is added to the previously expressed contents of the spermatic veins), and the whole diluted with an equal quantity of distilled water, and filtered through thin filtering-paper. Every vessel and instrument used is first thoroughly washed in a strong solution of corrosive sublimate and dried with alcohol, and the filtering conducted under glass. Fluid thus prepared presents no bacteria, and when used within six hours, in no instance produced any local disturbance."

† "Dictionnaire des Sciences Médicales," p. 448.

‡ "The Reproductive Organs" (seventh edition), pp. 125–128.

§ See also Gascoine's paper on "Castration of the Cervidæ," in *Proceedings of the Zoological Society*, London, June, 1856, p. 156.

proportion of unmarried men among the intellectual, and some of the ablest works have been written by bachelors. Newton, Pitt, Kant, and many others renowned for intellectual profundity, were single, and "hated women." It was from such considerations that our English ancestors ordained that resident university fellows should remain unmarried, and like reasons doubtless obtained to secure the decree of celibacy to the priesthood of the Church of Rome. Acton asserts that in the adult "the intellectual qualities are usually in inverse ratio to the sexual appetite;" that continence, or, at best, very moderate sexual indulgence, is a "great benefit to those engaged in serious studies,"* —a statement confirmed by such illustrious scientists as Darwin, Huxley, and Proctor; and that sexual quiescence "occurs principally where the intellectual powers have been very highly cultivated, or where the body has been subjected to strong and constant physical exertion."

3. *Why does excessive sexual indulgence, and waste of specific products, in both females and males, invariably tend to mental, moral, and physical impairment?*

The facts embodied in this query are so self-evident as to require no comment: all physiologists admit, in no small measure, the approximate truth of Fernel's "*Totus in homo semen est.*"

4. *Why is a larger quantity of spermine stored up in the generative and nervous systems than in other portions of the body; and why are these two systems so dependent, mutually, upon each other?*

It should be remembered that the semen is a highly organized fluid, requiring the expenditure of much vital force in its elaboration and expulsion. Even in the strongest man or animal, all the functions connected with this product are most vital and important. That the ancients revered it as the source of Life has already been shown. Camus (1772) declared it is composed of microscopical brains, an opinion not very far removed from that of the earliest writers of whom we have any cognizance, as they regarded it as a discharge from the brain and spinal cord, and called it "*cerebri stillicidium.*" The latter also employed the term *tabes dorsalis* as a synonyme for what we are pleased to denominate spermatorrhœa, and defined it as a "discharge from the spinal marrow." Hippocrates said:† "The humors enter into a sort of fermentation, which separates what is most precious and most balsamic, and this part thus separated from the rest is carried by the spinal marrow to the generative organs." And even so late as the time of Richerand, we find in his "Physiology," a query, if seminal waste may not be "self-destruction of the soul." Also M. Parise,‡ in his valuable and interesting treatise on the maladies of senility, expresses himself to the same effect, and says, "Its importance is demonstrated by the fact the very smallest quantity contains life in activity, and can communicate it; that its presence and its secretion impress the organization with an extra quantity of force and energy, whereas repeated loss of it enervates and rapidly wears out the body. It has been calculated that an ounce of semen is equivalent to forty ounces of blood. According to Bichat, the secretion of sperm is in an inverse proportion to the secretion of fat; and we at once see the reason semen is the essence of the whole individual. It is the balm of life,—one of its best and most powerful stimulants. That which gives Life is intended for its preservation!"

5. *Why is spermine found in excess in the detritus of wasting diseases, and in an unresolved and (partially, at least) insoluble state in anæmias and leucocythæmia?*§

6. *Why do marked stimulant and tonic effects commonly follow upon replacement and reabsorption into the general economy?*

7. Why do certain foods, now known to contain this principle in comparative excess, obtain a reputation as sexual stimulants? Are they not truly so, and the evidence of their activity first manifested in the central nervous and genital systems?

8. As all forms of flesh contain spermine in greater or less proportions, may not this fact be the secret of the superior physical and mental vigor usually manifested by meat-eaters and omnivorous feeders as compared with strict vegetarians?

* Continent celibacy in women, however, appears specially prone to induce phthisis. There is lacking a balance, so to speak, that can be remedied only by the grand function of wifehood and maternity. It is also likely that lack of ovarian stimulation and of absorption of male products are important factors. To this last it has been objected that the semen of the human male is in the main non-absorbable; but this is untrue, since, under normal conditions, it is materially changed, and rendered fluid, by contact with the secretions of the female.

† "De Genitura," Fœsius, p. 231.

‡ Reveillé-Parise, "De la Vielesse," p. 415.

§ *Vide* Böttger.

9. Is not the corollary evolved from the evidence as a whole, proof that the chief end of existence, physiologically considered, is the imparting of Life by perpetuation of the species,—the fastigium of fecundity or reproductive power marking the height of development and the beginning of decay?

10. Finally, on careful review of the evidence, when freed from sensationalism, are there any grounds for the assumption, so oft reiterated, that the theory of M. Brown-Séquard is "unnatural," "impracticable," "unphysiological," and "impious?"

203 GRANDY AVENUE.

ARSENITE OF COPPER IN BOWEL COMPLAINTS.

BY L. WORSHAM, M.D., EVANSVILLE, IND.

IN the July number of the THERAPEUTIC GAZETTE I read Dr. Aulde's clinical notes on "Arsenite of Copper." While I was very sceptical, nevertheless I concluded to give the remedy a trial before rejecting it as useless.

I now have to report a few clinical observations as to its use. It is needless for me to say that the facts that I have recorded have dispelled my scepticism, and have made me a firm believer in the efficacy of arsenite of copper in bowel complaints.

CASE I.—*August* 24.—J. W., aged 30; strong and healthy. He was taken suddenly in the night with a severe pain in his stomach and bowels, and frequent operations. As I had never done anything for him before, nor had I tested the efficacy of arsenite of copper, I gave him sulph. morph., gr. ¼. At noon of the same day the pain was less, but the frequency of the diarrhœic discharges unabated. A tablet of arsenite of copper, dissolved in six ounces of water, was given him, with directions to take a teaspoonful every ten minutes for the first hour, and every hour thereafter. Two days subsequently I saw him on the street, when he informed me that he was cured before the bottle was emptied.

CASE II.—*August* 26.—G. S., aged 28; clerk in railroad office. He has had diarrhœa more or less since May 24. Has had treatment from physicians, besides taking various household remedies, without effect. Gave him a tablet of arsenite of copper, dissolved in six ounces, with specific directions how to take it. Several days afterwards he reported that he was all right. Twice since he has applied to me for one of those "white things," which, he says, is the only thing that does him any good.

CASE III.—W. W., aged 7 months. On August 22 was taken with a high fever and violent purging. On the 23d I saw him for the first time, temperature 103.2°, pulse 150, and having fifteen or twenty evacuations in twenty-four hours, some containing mucus, others large and watery. Gave bismuth, tinc. opii camph., and fl. ext. coto bark.

August 24.—Not any improvement in his condition; gave him quinine.

August 25.—Operations very frequent, the mother couldn't say how many, as she had not counted them. They were not changed in character. Temperature, 103°. Gave a tablet of arsenite of copper, prepared as in the cases above reported. Told the mother to get a piece of paper, and keep a correct account of the operations that he may have in the next twenty-four hours.

August 26.—He has taken the medicine faithfully since yesterday. He has had twenty-two operations in twenty-four hours. (She counted the slightest stain on the diaper as one.) Some of them contained blood and mucus. His fever is less, and his general appearance is better. He has taken three grains of quinine in the last twenty-four hours.

August 27.—He has had twenty-two operations in the last twenty-four hours; not much change in the character of the stools. His temperature 101°, and he appears better. Gave him another tablet, prepared as before.

August 28.—He has had eighteen operations since my last visit. The mother said they were not changed in character. He appears brighter. Temperature, 99.6°. The same treatment continued.

August 29.—He looks very much better; no fever; still has diarrhœa, seventeen operations in twenty-four hours.

September 1.—In the last two days he had four operations; "signs of blood in two." He is hungry and cross. Arsenite of copper continued.

September 3.—Called at the house, and was informed that he was perfectly well, as his general appearance attested.

CASE IV.—W. K., aged 3; German. He is well grown, and looks healthy; his abdomen is very prominent. His mother says that he has had diarrhœa ever since his birth. He always has seven or eight, and frequently ten or twelve operations a day. Dark color

when taking medicine, light when not. The evacuations are very copious and exceedingly offensive. Dieting has no influence in lessening the frequency or diminishing the quantity of the discharges. Gave him a tablet of arsenite of copper, gr. $\frac{1}{100}$, and directed his mother how to administer it.

August 27.—Mother said that he was not any better; that she gave him the medicine regularly for the last twenty-four hours, except when he was asleep.

August 28.—Mrs. K. said that Willie had only one operation last night, dark and more natural than it had been for two years. Gave her another tablet, and told her to continue the medicine.

September 1.—Mrs. K. said that her boy had been very much benefited since he commenced taking the tablets. He now has two or three operations a day, dark color, and consistent. He is not troubled at all at night with his bowels.

CASE V.—Mrs. O'H., pauper, aged 60.

August 27.—She has had diarrhœa since the 24th inst. Tongue heavily coated; pulse 80; temperature normal; no appetite; weak bowels, moving every fifteen or twenty minutes; tinc. opii, fl. ext. coto bark, and bismuth were given her without effect. Gave her a tablet dissolved in water, with explicit directions how to take it.

August 28.—She said that she was no better, had a great many operations in last twenty-four hours, that the "mouth-wash had not done her any good." When informed that she should have swallowed it, she asserted with considerable warmth that she had done so. Prepared another tablet for her; not to use as mouth-wash, but to swallow it.

August 29.—Found Mrs. O'H. out of bed, and in the kitchen attending to her household duties. She had taken nearly all of the medicine, and the last operation that she had was natural.

CASE VI.—W. D., infant, aged 10½ months; bottle-fed. He has suffered greatly for the last three months with the colic. His features were pinched and drawn. His parents have passed sleepless nights on account of screams. He was taken to the country for a month. He returned very much improved. On his return to the city he was taken with diarrhœa; despite laudanum, tinc. catechu, etc., he had daily three or more thin operations, containing mucus and curdled milk, with griping and colicky pains. Took arsenite of copper two days; pain disappeared; operations less frequent and more consistent. He is now eating well and growing rapidly.

CASE VII.—Mrs. H., German, aged 43. She was taken suddenly about 4 A.M. with a severe pain in her stomach, back, and legs, and desire to go to stool, when she had a very copious evacuation. I saw her at 3 P.M., and she had responded to the call of nature about twenty times since morning. She passed each time about a teaspoonful of mucus and blood. There was considerable tenesmus. A tablet of arsenite of copper was given her in six ounces of water, with directions how to take it. On my visit to her the next afternoon, she was up and at work. She said that she was entirely relieved of all pain and tenesmus after taking the medicine one hour. Her bowels had not moved but once after commenced taking it.

Cases III. and IV. are instructive, inasmuch that they show that one tablet will not always effect a cure, but a perseverance in the treatment will crown our efforts with success. My observations of these cases differ from Dr. Aulde in that I have used more than one tablet in the same case. This article has attained a greater length than I intended that it should. I felt that it was a duty that I owed Dr. Aulde and the profession to give my testimony of the favorable results that I have obtained from the use of arsenite of copper tablets.

REPORT OF THREE CASES OF REMARKABLY SLOW PULSE,

TO WHICH IS APPENDED BRIEF ABSTRACTS OF NINETY-THREE CASES OF SLOW PULSE FOUND RECORDED IN MEDICAL JOURNALS IN THE LIBRARY OF THE SURGEON GENERAL'S OFFICE, WASHINGTON, D. C.*

BY D. W. PRENTISS, M.D.†

(Concluded from vol. v. p. 812.)

CASE LIV.—(*Lond. Lancet*, December 30, 1876, p. 919, C. Handfield Jones, M.B., F.R.S. Slow pulse, with seizures of epileptoid character.) Slow pulse; heart apparently sound, except to dynamic tests; attacks of total unconsciousness, lasting three or four hours; low temperature; effect of belladonna on the pulse.

* Read before the Association of American Physicians at Washington, D. C., September, 1889.

† Professor of Materia Medica and Therapeutics, Columbian University, Washington, D. C.

I. O., shopman; aged 62 years; pulse 33 to 39; good force; temperature at 2 P.M., 95.2°.

October 3.—Pulse arrested by pressure of 173 grams in right wrist.

October 5.—Pulse 28; temperature 98.4°; feels better; had taken iron, spirits of chloroform, and ½ grain of extract of belladonna three times a day.

October 9.—Medicine stopped and coffee ordered, one pint daily; this gave relief.

From September 30 to October 11 the temperature was subnormal, ranging from 95.2° to 98°. The pulse during same time from 33 to 44. Belladonna was given to lessen inhibitory influence. It had no effect on the pulse, but caused a rise in temperature of 3.2° in three days.

I. O. was readmitted November 24.

October 16.—Pulse 42; two days ago had a fit.

October 23.—Another fit.

November 1.—Pulse 33.

Discussion on Cases LIV. and LV.—Dr. Jones thought that both brain and heart were ill nourished, producing fatty degeneration, and this was a cause of slow pulse, or that the epilepsy caused arrest of the heart by irritation of the *vagus*.

Dr. Walshe remarks (third edition, p. 166) that if slow action is of cerebro-spinal origin the heart-beat is strong, and, if of cardiac origin, it is weak. Slow pulse is common in epilepsy.

Mr. Thornton considers syphilis a frequent cause of slow pulse.

Dr. Jones considered that in his cases the slow pulse was of double origin. The heart was not sound, but, had not a decided epileptic tendency existed, the peculiar seizures would not have occurred. Bromide of ammonium, with iron or phosphorus or cod-liver oil, would be the best drugs to employ in similar cases.

CASE LIV.—*C. Handfield Jones, S. O.*

October 4, 1876. Pulse 30; pressure 84 grammes.

CASE LV.—*C. Handfield Jones.*

October 25, 1871. Pressure 140.

November 24.—Pulse 36; temperature 96.8°; unconscious spells.

December 2.—Temperature 95.6°; urine normal.

December 4.—Pulse 38; temperature 96.8°; epileptic attacks at night (*petit mal*).

CASE LV.—(Second case reported by Dr. C. Handfield Jones, *Lond. Lancet*, December 30, 1876.) Slow pulse; attacks of epilepsy, perhaps also of syncope; heart-sounds weak; pulse of fair force.

September 19, 1876.—Pulse very peculiar, 36 per minute; every few seconds a distinct sound, followed by a weak one, and then a long pause; no abnormal heart-sounds.

September 21.—Pulse 30.

September 28.—Pulse 28.

October 5.—Pulse 28.

October 13.—Pulse 23.

CASE LVI.—(*Lond. Practitioner*, vol. xvi., 1876, p. 186, R. Somerville, M.D.)—A professional man, aged 37 years; temperate; not a smoker; good general health; business worry; irritation of the stomach; imprudently ate salt fish for supper; slept badly, and towards morning vomited several times; tongue clean; feeling of oppression at the epigastrium; pulse 25, otherwise normal.

First day, continued unchanged.

Second day, pulse much quicker, irregular; heart's action tumultuous; no organic disease; large doses of bromide of potassium and belladonna.

Third day, the same; præcordial oppression less.

After eighth day improvement continued to recovery.

Peculiar symptoms explained as due to irritation of the pneumogastric nerve from the stomach.

Czermak, 1865, is quoted. It is shown that irritation of the pneumogastric slows the heart in man, as it has long been known to do in the lower animals. In Czermak's own person, by pressure on right side of neck, at the inner side of the sterno-mastoid muscle, squeezing the nerve between the fingers and a small hard lump, he could reduce his pulse at will one-half, attended with a feeling of oppression and constriction about the sternal region.

He divides the nerve into three sections as to its influence on the heart,—

1. The roots in the medulla oblongata.
2. The trunk.
3. The terminal branches.

1. Change in the medulla is the most frequent cause of change in pulse-rate.

2. Trunk is rarely affected; pressure as in Czermak's case or by tumors.

3. The terminal branches are more frequently affected by poisons, as nicotine or lead, which also act on the medulla.

In the case under consideration there was nothing to indicate disease of the medulla or of the nerve-trunks. The trouble came from affection of the terminal branches through irritation of the stomach, or possibly there may have been a subtle poison in the salt fish.

Meyer and Pribram (*Wien. Akad. Sitzungsber.*, July, 1872) found that punching the stomach would cause slow pulse, irritation being conveyed from the stomach to the medulla oblongata and back to the heart.

Supposing it to be reflex, the bromides would be indicated.

CASE LVII.—(*Pittsburgh Med. Review*, 1886, p. 245, W. C. Shaw, A.M., M.D.)

May, 1887.—John Murphy, aged 19 years. In usual health until May 19, 1887, when he began to feel badly.

May 21.—After an attack of cholera morbus, he fainted; pulse 25 to 27; ammonia to nostrils; head low. Same evening, pulse 21; respiration 36. For two hours pulse remained from 18 to 21. At 11 P.M., pulse 40.

May 23.—Pulse 45; recovered.

CASE LVIII.—(*Bull. Acad. Royal de Méd.*, 1887, p. 737. Case of permanent retardation of the pulse, with attacks of syncope and epileptiform seizures. M. le Dr. Lebrun, of Namur.) Pulse 18 to 36 per minute; died in epileptiform attack; no autopsy.

Quotes Charcot, referring to three cases in which the cause of the slow pulse was ascribed to the nerve-centres (*Leçons sur les Maladies du Système Nerveaux*).

CASE LIX.—(*N. Y. Med. Record*, November 26, 1888, Dr. Squire.) Large, fine-looking man, aged 80 years; pulse ordinarily 28 per minute. Ten years ago had heart-trouble, the nature of which was not known. Since that time pulse has ranged between 24 and 32 per minute. The heart is hypertrophied and the arteries hard; no sign of valvular lesion; no intermediate beat. He is in excellent health, with uncommon vigor for his age, and, except that he is short-breathed when he walks up-hill or makes other special exertion, shows no sign of failure of the circulatory apparatus.

CASE LX.—(*Lond. Med. Gaz.*, vol. XX., 1837, p. 254. Remarkable slowness of pulse in a horse. Reported by Mr. Pope in the *Veterinarian.*)

October 17, 1835.—Mr. Pope was called to see horse belonging to Mr. Ruxton Hill, of Fiddes, Feveran. Pulse was found to be only 10 per minute, with a strong, bounding rattle, which made the whole chest shake, so that it could be seen at a distance. The heart at times ceased beating and the horse fell down. The veterinary not knowing the nature of the disease, the horse was bled; given laxatives every second day; a seton inserted behind each ear; a rowel in the chest; and this treatment continued for a fortnight, when he gradually fell off his feed. In consequence of this the laxatives were stopped, and the pulse rose to 25. As, however, the horse was growing worse, and continued to fall down, it was decided, in consultation with other veterinarians, that the case was hopeless, and he was killed.

Autopsy.—The disease proved to be dropsy of the spine in the situation of the cervical vertebræ. On opening the spinal canal at the first and second vertebræ a considerable quantity of water flowed from the neck, evidently from the spinal cavity. The brain and all the internal organs appeared quite healthy.

CASE LXI.—Mr. E., carver and gilder; aged 71 years; heavy drinker for some years. First seen twelve months previous, when his pulse was 40, regular and full.

November 24.—In full possession of all his faculties and in good spirits; pulse 36; temperature 96°; respiration normal. He is rather lethargic, and spends most of his time

in bed (John Wheeler, M.D, Ch.M., Bayswater, *Brit. Med. Journ.*, vol. ii., 1879, p. 886).

Case LXII.—Male, aged 68 years. For past four years, while in the best of health, pulse is only 26 per minute. There is hypertrophy of the heart, amounting to "contaurinism." There is occasionally a slight mitral musical murmur, and albumen has been found in his urine on two or three occasions. He is subject to attacks of syncope, and has for months had some swelling about the ankles. The writer (Dr. Norris) also mentions that he has frequently had pulses varying from 30 to 40 per minute in cases of typhoid fever, when the temperatures were typical of typhoid (J. Patterson Norris, M.D., Dalbeattie, Scotland, *Brit. Med. Journ.*, vol. ii., 1879, p. 886).

Case LXIII.—Male; coal merchant; aged 96 years; suffering from slight bronchial catarrh; has had seventeen children, the eldest still living at 75 years. Pulse on 24th and 29th, otherwise normal, was 36 per minute; intellect clear; sight and hearing good. Syncope threatens if he assumes for long the upright position. The writer would be glad to hear if such a low pulse is rare, as he has never met with a similar case (J. Black Noble, M.R.C.S., Eng., Trinity Square Borough, *Brit. Med. Journ.*, vol. ii., 1879, p. 814).

Case LXIV.—Mr. Noble, in reporting a case of slow pulse (36) in a gentleman 96 years of age, asks if such is rare. An old woman here recently passed away at the age of 83 years, whose normal pulse, when in perfect health, some months before her death, was 25 per minute. Mr. Garraway also mentions a case of rapid pulse in a young lady with consumption,—180 per minute,—which condition has not varied for months (Edward Garraway, Faversham, *Brit. Med. Journ.*, vol. ii., 1879, p. 938).

Case LXV.—Case of parish minister, Ayrshire, whose pulse in 1875 was 32, and on various other occasions only 36. Pulse has always been slow; both radials alike. The retardation, as far as could be determined, was shared in equally by all the elements of the cardiac revolution. If anything, there was a slight comparative prolongation of the "pause." The sounds were clear, deliberate, and prolonged. When the pulse was counted at 32 there was a condition of general nervous prostration; at other times had ordinary health. The patient was ordinarily vivacious, and not by any means of a morose habit (R. Park, Glasgow, *Brit. Med. Journ.*, vol. ii., 1879, p. 938).

Case LXVI.—Gentleman, aged 38 years; constipated habit and torpid liver; pulse 40, rather weak; heart-sounds somewhat "muffled," but not remarkably so; no valvular disease; no tendency to syncope; no breathlessness on exertion, nor much inconvenience from cold extremities; on subsequent occasions pulse varied from 40 to 60, but when 60 was irregular. A brother was found dead in bed, and some near relatives were of the hemorrhagic diathesis (Jos. Quirke, M.R.C.P.E., etc., Birmingham, *Brit. Med. Journ.*, vol. ii., 1879, p. 938).

Case LXVII.—Gentleman, aged 67 years; attacks of faintness and dyspepsia, also symptoms of cerebral softening; pulse 32, regular, soft, and moderately full; at subsequent visits ranged from 30 to 36, never exceeding the latter; a year later, on three occasions, it was 28. Died suddenly while sitting at the table (Jas. Crocker, M.R.C.S.E., L.S.A., Bingley, *Brit. Med. Journ.*, vol. ii., 1879, p. 938).

Case LXVIII.—Woman, aged 69 years; faintness, dizziness, and general languor; pulse from 30 to 36; its usual rate was 32. She is still living and in tolerable health, except occasional faintness (*Idem*).

Case LXIX.—*May* 13, 1879.—Mr. ——, aged 71 years; shortness of breath, and unable to go about much; action of heart very irregular; pulse weak and slow, 28 per minute; for past six months has ranged from 28 to 30 per minute; well in every other respect. Cautioned not to leave home much, or stoop much, as in working in garden, to smoke very little, and, as a stimulant, whiskey in moderation (W. A. Wannan, L.R.C.P. and S.E., Arbroath, N. B., *Brit. Med. Journ.*, vol. ii., 1879, p. 1020).

R. Gossett Brown says: "In many thousands of cases, both in hospital and in private practice, I have twice seen cases of slow pulse."

Case LXX.—Clergyman, aged 85 years; for six or eight years never knew his pulse to exceed 32; suffered from concentric hypertrophy. One Sunday had an interview with him. At three o'clock the following morning was summoned, and found him dead in bed.

Case LXXI.—Gentleman, aged 70 years. Autumn of 1872 was called to see him. To use his own expression, "Had never had an ache or a pain in his life." Pulse 110; temperature 102°; slight friction sound next day; pulse 124; temperature 102°; three days later, pulse 114, firm, and regular. As

syncope threatened if he assumed the erect posture, he was kept recumbent. For months the pulse did not exceed 17.

Treatment.—Moderate doses of iodide of ammonium and iodide of iron, with sustenance every hour or two, night and day.

At length the pulse reached 19.

The medicinal agents employed were adopted under the impression that during the early days some deposit had taken place on the membranous covering of the aorta.

At length the pulse rose to 25, then to 30, and at length to 42, at which time he was allowed to take gentle exercise in charge of an attendant, who always goes prepared with stimulants. He is still alive (R. Gossett Brown, M.R.C.P., *Brit. Med. Journ.*, vol. ii., 1879, p. 1020).

CASE LXXII.—*December* 3, 1879.—Woman, aged 65 years. Ovariotomy, tumor weighing forty pounds removed. Previous to operation pulse was 46. Took chloroform well, and at end of operation pulse was 36. Temperature did not exceed 99.8°, and now is normal. Heart-sounds quite healthy, and beat very regular. Patient is a little woman, rather spare, and carries her threescore and five years very well (Geo. Granville Bantock, M.D., *Brit. Med. Journ.*, vol. ii., 1879, p. 1020).

CASE LXXIII.—Mr. W., aged 70 years; temperate; always in good health, excepting fits; slight fit twenty years ago; swimming in the head, coming on suddenly; coldness of extremities. For last eight years fits more frequent, coming on without apparent cause.

July 29.—After attack of indigestion had a fit; pulse 22, full, and firm; no pain nor uneasiness about head. A purgative and an alkaline mixture were ordered.

August 2.—Pulse 17; had many fits during the day; no heart-disease could be detected.

Description of "Fits."—If slight only, face became pallid, respiration rather labored and quicker than natural; no pulse, but directly the heart acted the pallor rapidly gave way to a blush, and all was as before.

If severe, the pallor increased, the expression became ghastly, the eyes turned up; involuntary twitchings; respiration quick and labored, with the alæ of the nose violently drawn in at each inspiration, producing a peculiar noise; surface cold; perfect loss of sensation, volition, etc., and sometimes involuntary discharge of fæces and urine. The heart was not acting, and I observed, for more than half a minute, when no stroke whatever could be detected.

If a feeble action of the heart only took place, such as could scarcely be felt at the wrist, the symptoms would continue; but directly a decided contraction occurred the face would immediately change from pallor to redness, then a suspension to the breathing, in which the hand would be raised to the throat; an apparent state of strangulation existed for the moment; sensibility immediately returned. The pulse then beat steadily for five beats, at the rate of 60 in a minute, and he would always, without exception, conceive that he had been asleep.

August 3.—4 P.M., pulse 17, irregular, and intermittent; 9 P.M., pulse 16.

August 4.—Expired in fit.

Autopsy.—Brain congested, but otherwise healthy; cartilages of ribs completely ossified; right pleura healthy; left pleura adherent; no liquid in pleural cavities; pericardium healthy; aorta dilated. Heart rather large; cavities and valves healthy, except a spot of ossific matter at the base of one of the mitral valves, which in no way interfered with its function. Coronary arteries: some yellowish spots were observed between the middle and inner coats, and in left coronary artery was a very small spot of ossific matter. In the interior of the aorta were very many yellowish-white spots, in some places forming patches. In one spot, size of a sixpence, was a softened and ulcerated surface; in another, complete ossification. At bifurcation into iliacs, complete ossification, not, however, including the whole circumference of the vessels. The internal coat was destroyed on the surface of this ossification, so that it projected into the cavity of the artery. The aorta was very little diseased at its upper portion, but this increased as the vessel lengthened. The branches of the left internal iliac were completely ossified; the omentum largely loaded with fat. Intestines healthy, but mesenteric vessels seen most beautifully encircling them. "Nutmeg" liver; openings of hepatic veins unusually large. Kidneys contained cysts. Other organs not described presented nothing unusual.

In the discussion of this case, Mr. Gibson is clearly of the opinion that the fits were a result of the stoppage of the heart's action, and not the cause. He considers the disease of the aorta, as shown in the autopsy, to have been the cause of the slow pulse, and proceeds to discuss the question at considerable length (John R. Gibson, Esq., *Lond. Med. Gazette*, vol. i., 1838 and 1839, pp. 123 and 155).

CASE LXXIV.—(*Dublin Qr. Jour. Med. Sc.*, vol. vii., 1849, p. 501, Chas. Halpin, M.D.) Case of slow action of the heart in fever. Dr. Halpin and Dr. Mease, in joint report on epidemic fever of 1847, stated that they had met with nine cases in which the heart's action ranged between 40 and 50 beats in the minute, yet all the cases terminated favorably (*Dub. Med. Journ.*, No. 13, February, 1849, p. 116).

CASE LXXV.—Ellen G., aged 18 years.

December 2, 1848.—Pulse 96; skin hot; tongue dry and clean; considerable thirst; no headache. Fever ran its course mildly, and terminated on eleventh day.

December 14.—Relapsed; pulse 84.

December 15.—Pulse 70.

Pulse continued to decline steadily until the 18th, when it was 42.

December 18.—Pulse 42.

December 19.—Pulse 45.

December 20.—Pulse 46.

December 21.—Pulse 44.

December 22.—Pulse 44.

December 23.—Pulse 40.

December 24.—Pulse 40.

December 25.—Pulse 40.

December 26.—Pulse 42.

December 27.—Pulse 52.

December 28, 29, and 30.—Pulse 80.

Discharged January 6; pulse 68.

CASE LXXVI.—(Two cases of slow action of the heart in fever, Jas. Y. Carithers, Hendricksville, Ala.)

October 1, 1853.—Mr. S., aged 20 years; febrile symptoms; pulse 90; light chill; emetic of ipecac, blue pill, quinine.

October 4.—Pulse 75.

October 10.—Pulse 94.

October 12.—Pulse 70.

October 17.—Pulse 42.

October 18.—Pulse 40.

October 20.—Pulse 40.

October 23.—Pulse 50.

October 26.—Pulse 84. (Case of intermittent or remittent fever.) (*So. Med. and Surg. Journ.*, 1854, N. S. 10, p. 462).

CASE LXXVII.—(Slow action of the heart in fever.)—Mr. A., aged 34 years; intermittent or remittent fever.

November 10, 1853.—Pulse 86.

November 22.—Pulse 74.

November 23.—Pulse 60.

November 24.—Pulse 52.

November 25.—Pulse 46.

November 26.—Pulse 46.

November 28.—Pulse 84.

November 29.—Pulse 68.

November 30.—Pulse 56.

December 2.—Pulse 56.

December 4.—Pulse 60; well (*So. Med. and Surg. Journ*, 1854, N. S. 10, p. 462).

CASE LXXVIII.—(Very slow pulse, connected, probably, with disturbance of the digestive functions.) Farmer, aged 53 years. For twenty-five years has suffered from costiveness, but general health good. For eight years dyspeptic symptoms; weak; sometimes giddy; would fall unconscious. Pulse 20 per minute; at one time as low as 12; not unfrequently would rise to 60. Pulse full and strong; no pain around heart; no palpitation; slight systolic souffle; heart-sounds muffled and distant; hands and feet cold. He is able to do light work. He is pale when he has his worst attacks (Dr. Jackson, *Bost. Med. and Surg. Journ.*, N. S., vol. iii., 1869, p. 376).

CASE LXXIX.—Young man; exceedingly sick with acute dysentery; pulse 40, which it never exceeded; recovered. Several months after met him returning from his work (carpenter) in perfect health, and took his pulse, to find it 40 (Dr. C. K. Kelly, *N. Y. Med. Record*, vol. xvii., 1880, p. 164).

A. T. Keyt, M.D., Cincinnati (*N. Y. Med. Record*, vol. xvii., 1880, p. 69) refers to previous observations as demonstrating exaggerated delay of pulse in mitral insufficiency, aortic obstruction from heavy aortic valves, and aortic aneurism (*Cincinnati Lancet-Clinic*, March 22 and April 19, 1879; *N. Y. Med. Record*, November 29, 1879).

CASE LXXX.—Chris. H., aged 31 years; "enormous delay of the pulse;" systolic murmur, accentuated both at apex and second left interspace; second sound clear and loud. Sphygmograms were taken September 6, 1879, and are reproduced in the report, showing tracing from the heart, the subclavian arteries, and the radials. Patient died November 16, 1879.

Autopsy.—Heart weighed fifteen ounces, and was fatty. Just above the aortic valves were two aneurismal pouches, one projecting forward and to the right, and the other forward and to the left. The first of these, looking like dilatation of the *sinus* of *valsalva*, contained no clots; the other was filled with laminated fibrin. The latter was the size of a small apple, and presented a distinct ring, about half the diameter of the pouch. It pushed its way in various directions, and pressed upon the pulmonary artery in such a manner as to occlude that vessel entirely. Both dilatations had very thin walls. The

mitral and aortic valves were much thickened, but were competent by the hydrostatic test. The mitral valve was filled with nodular vegetations and was incompetent. Right auricle distended, with soft clot and fluid. Tricuspid and pulmonary valves presented no disease. Pericardium thickened, and contained twenty-one ounces of fluid. Aorta ætheromatous.

(The enormous delay of pulse referred to in this case is not a slowing of the pulse, but delay in the time occupied by the pulse-wave in reaching the radial artery. This is given as $\frac{40}{100}$ of a second to reach the right subclavian and $\frac{47}{100}$ of a second to reach the radial. This is considered as enormous, when it is remembered that the normal delay to the subclavian should be $\frac{1}{18}$ of a second.—D. W. P.)

CASE LXXXI.—M. V., aged 70 years; robust constitution; pains in limbs and knees; rheumatism; attack of convulsive movements, but not feeling ill; pulse 24; pulse previously had been normal. Spasms continued to recur with increasing violence until after ten days they ceased, and pulse returned to 70. The pulsations of the heart on March 23 were 24, and continued to diminish in frequency until for several hours before the change; but 3 pulsations could be distinguished to the minute. At date of report, six weeks later, he was much prostrated, but conversed and ate, and seemed improving.

CASE LXXXII.—(*Gaz. des Hôpitaux*, Paris, 1876, vol. xlix. p. 788, service of M. Tillaux.). —Case of old person, with pulse of 20 per minute; attacks of syncope; emphysema of lungs; displacement of apex of the heart and *bruit de souffle*, which is prolonged during the whole of the systole.

CASE LXXXIII.—Lady, aged 69 years; suddenly expired. Six weeks before had had apoplectic attack, from which she was recovering. Her usual pulse was 28 per minute, but on the day of her death had risen to 38, which excited apprehension in the mind of her medical attendant, who saw her a few hours before death. She had had four apoplectic seizures in twelve years, but during the interval had frequent fainting spells. Cupping over the nucha gave relief. Attacks of indigestion aggravated them. She was very sensitive to cold (C. Basham, M.D., Truro, *Provincial Med. and Surg. Journ.*, 1842, p. 68).

CASE LXXXIV.—Man, aged 52; a pedler; with pulse of 22 per minute; change in position did not affect pulse; heart-sounds clear and normal; never had any serious illness; saw him in two or three prolonged fainting fits; continued this way about eighteen months. One morning fell dead from his chair, after some slight excitement. He was shown to several medical men, who had never seen so remarkably slow a pulse (J. S. Gunning, Enniskillen, Ireland, *Brit. Med. Journ.*, vol. i., 1880, p. 113).

CASE LXXXV.—Old man, aged 79 years. Pulse for nine months has been 22 per minute, full, fairly strong, and regular, but accompanied with great præcordial uneasiness and tendency to syncope. Attributed his heart-troubles to hypodermic use of morphine. Eighteen months before suffered a compound fracture of fibula and tibia, for pain from which the morphine had been given. After hypodermic injection had a "horrible sensation" at the heart, so that he preferred to endure the neuralgia rather than take it. Later on began to suffer convulsive fits. One day while holding the finger on the pulse he had a fit. The pulse suddenly stopped, and a violent spasm seemed to radiate from the heart to every part of the body, which was convulsed from head to foot, the eyes opening and shutting every second. The heart did not beat for thirty-five seconds; then for twenty-five seconds. It beat *four times per minute for about four minutes*, when consciousness, which ceased when the pulse stopped, returned, as the pulse went up to 22. The fits increased in frequency until he died exhausted (W. Henry Day, L.R.C.P., Pentonville, December 30, 1879, *Brit. Med. Journ.*, vol. i., 1880, p. 113).

CASE LXXXVI.—Gentleman, aged 74 years; fell down, and was insensible for a few minutes; soon after pulse was 28. From June 21, 1879, to July 3, 1879, pulse was from 22 to 28. When pulse became 22, which it did many times a day, he became insensible, and he had a fit resembling epilepsy. In several of these attacks it was thought he must die. He became convulsed and livid. They usually lasted about one minute, but sometimes as long as three or four minutes. For several days the seizures came every ten minutes. After July 3 they gradually passed off. Pulse 28, full, and regular.

August 8.—Another attack of syncope.

From August 8 to August 13 pulse between 15 and 56; gradually improved, and now is well, with pulse of 60.

Treatment.—Kept in bed; stimulants, ni-

trite of amyl, ammonia, digitalis, but could see no effect from the treatment.

It is interesting to note that of eleven cases recently recorded in the journal, the age on the average was 72, and that eight were males (W. J. Tyson, M.B., F.R.C.S., Folkstone, December 30, 1879, *Brit. Med. Journ*, vol. i., 1880, p. 113).

CASE LXXXVII.—Gentleman, aged 70 years. In good health up to sixty years of age. He had been thirty-eight years in the army. Six years ago had apoplectic attack, followed by palpitation, uneasiness in region of heart, and a sensation as of something rushing to the top of the head. Pulse quicker than usual and intermittent. Two years later became suddenly faint on making exertion, and fell down insensible. After recovering consciousness, a feeling of faintness and languor was still felt. Pulse 25 to 30 per minute, which continued for four years; on one occasion down to 18, and, after unusual exertion, it would sometimes rise to 34. During three years was liable to syncope, but for last year had been free from them and in fairly good health. Action of heart regular; pulsation strong; no double beat; no evidence of valvular disease; respiration easy and natural; no sign of cerebral disease. First saw him in 1838. In 1840 pulse 26; heart still nearly normal; no valvular disease; left side somewhat hypertrophied and dilated; had always been temperate in his habits. He continued in his usual health until seven years after the remarkable slowness of the pulse showed itself, when he died suddenly in an attack of syncope; no autopsy (T. B. Peacock, *Provincial Med. and. Surg Journ.*, Lond., 1842, p. 68).

Dr. Austin Flint (*Amer. Pract.*, vol. xiii., 1876, p.1) refers to the following conditions as a cause of irregular and retarded action of the heart: Derangements of digestion, anæmia, sexual excesses, the immoderate use of tobacco, and prolonged mental anxiety. To these is to be added an intrinsic tendency of some persons to functional disorder of the organ.

Persistently rapid pulse also is referred to as an accompaniment of certain functional disorders, and also Grave's or Basedow's disease is referred. (The present writer once saw a case of Basedow's disease in which the pulse was between 200 and 300 constantly for several days before death, and another case of irritable bladder in a female with a pulse of from 140 to 180 for several months, with recovery.—D. W. P.)

CASE LXXXVIII.—Female, aged 35 years; general health good, excepting some neuropathic ailments; heart normal; pulse previously of usual frequency. After a choking attack in eating, causing violent and persistent coughing, with a sense of suffocation, she became livid, and was greatly prostrated; kept her bed for several days, complaining of faintness whenever raised, and suffering from irritability of the stomach; pulse 40 per minute; gradually returned to normal in two or three weeks, and she recovered. Died of typhoid fever several years after, and at autopsy heart was found normal (Dr. A. Flint, *Am. Pract.*, vol. xiii., 1876, p. 5).

CASE LXXXIX.—W. H. B., aged 38 years; convalescing from an attack of acute pneumonia of right lung; was taken with sudden sense of great prostration, coming on about noon; a feeling as if death were imminent from stoppage of the heart; was in state of great alarm; cold perspiration; pulse 40, intermittent; no cardiac murmur nor increase of cardiac dulness. For six weeks these attacks recurred. Lowest pulse noted was 35; urine normal; temperature normal. Made a tedious but finally complete recovery (Dr. A. Flint, *Amer. Pract.*, vol. xiii., 1876, p. 6).

CASE XC.—Mr. B., aged 53 years; intermittent fever for a year previous. After taking cold, pulse 25 per minute, rhythm, fulness, and force good; respiration 24; heart-sounds normal; recumbent posture and stimulants ordered.

First day, pulse 25; respiration 24; temperature, 97°.

Second day, pulse 32; respiration 15.

Third day, pulse 36.

Fourth day, pulse 42.

Fifth day, pulse 60.

Sixth day, pulse 80. (Dr. Foree, *Amer. Pract.*, June, 1874; also *Amer. Pract.*, vol. xiii., 1876, p. 7.)

CASE XCI.—Mr. S., aged 46 years; subject to sick headache, otherwise robust. Seen in consultation with Dr. J. H. Vandy, of Jersey City.

May, 1875.—Attack supposed to be malaria, with sick headache. Latter continuous and more severe at night; at times with delirium; most of the time savagely cross; pain in head relieved by morphine; pulse in health 70 to 75 per minute. Ten days after illness commenced pulse was found to be 40 per minute, once 38, increasing towards evening to 46 or 48. In three weeks was out of doors, though having headache for several weeks.

Quinine was given throughout the disease. The pulse gradually became more frequent, and finally returned to 74 per minute (Dr. Austin Flint, *Amer. Pract*, vol. xiii., 1876, p. 8).

Case XCII.—H. G., aged 43 years; seen in consultation with Professors Willard Parker and A. Jacobi. Had had a previous illness of a similar character. Fairly good general health.

January, 1874.—Weakness and palpitation on going up-stairs; pulse 40 per minute; no abnormal cardiac sound; lungs, liver, spleen, and urine show no sign of disease. He remained much the same until the following April, when he had attacks described like a cloud passing over him. These occurred generally in erect posture, and especially when walking.

In April pulse from 30 to 34 per minute. From May, 1874, to May, 1875, health good; pulse from 30 to 40 per minute.

May, 1875.—Had epileptiform convulsions; pulse accelerated during seizures, but in intervals from 24 to 36.

After May up to August no convulsions, but pulse 26 and irregular.

During August three epileptiform seizures, more severe, one lasting fifteen minutes. During seizures he became cyanotic, movements and appearance as though asphyxiated; pulse during seizure 40.

In September, Dr. Knapp examined retinæ and pronounced them normal.

Improved; attacks lighter; pulse rose from 26 to 36 per minute, and in November 1875, was attending to business.

Treatment.—Stimulants, bromide of potassium, and electricity were used, but did no good (A. Flint, *Amer. Pract.*, vol. xiii., 1876, p. 9).

Case XCIII.—Mr. S., aged 52 years. Previous health good; within three years had three attacks of faintness, and fell unconscious; no headache, paralysis, or other brain symptoms.

April, 1852.—After running after an omnibus had dyspnœa and palpitation, which increased, and was followed by congestion of the lungs and bronchitis. Pulse, which in health, had been 60, now became 26 to the minute. For a year he continued with varying attacks and comparatively good health, pulse ranging from 26 to 36 per minute.

Died suddenly (July 28) in fit of dyspnœa, followed by expectoration of mouthfuls of blood. A large tumor appeared in the abdomen some weeks before his death; no autopsy (*Assoc. Med. Journ.*, London, 1853, p. 877).

Dr. James Russell (*Med. Times and Gaz.*, vol. ii., 1877, p. 58) remarks on unusual slowness of pulse founded on a case illustrating that form of disease, discusses the subject, and gives an analysis of thirty-eight cases noted. The importance of heart-disease, especially degeneration of the heart-walls, as a cause, is dwelt upon.

Dr. Stokes (*Dublin Quarterly Journal*, vol. ii.) refers to "typhoid softening of the heart as coexisting with a pulse of from 30 to 40 per minute." A like degree of slowness has been noticed by other observers, especially by Dr. Murchison, as likely to occur in that form of fever.

"On the whole," says Dr. Russell, "the conclusion respecting these cases of degeneration of the tissues of heart must be that, although the degeneration does not offer of itself a full and complete explanation of the reduced frequency of the pulse met with in certain of the cases, yet it constitutes a very important indication of the presence in the heart itself of some influence directly interfering with the irritability of its fibre; thus these cases have much value in reference to the others already mentioned, in which evidence of other forms of heart-disease was presented by the patient."

Case XCIV.—Patient presented embarrassed breathing, and was supposed to have water in the pericardium. Pulse usually 29, but on some days was as low as 14. In three months all the heart-symptoms disappeared and pulse regained its normal standard (Dr. James Russell, *Med. Times and Gaz.*, vol. ii., London, 1877, p. 60).

Case XCV.—Man, aged 38 years, admitted to Birmingham General Hospital April 13, 1876. Slow pulse for seven or eight years, but no suffering in consequence.

December, 1875.—Began to have faint attacks, at first two or three a day, but increased in frequency until there were as many as sixty or seventy a day. The faints were attended with momentary insensibility, followed by immediate return to consciousness. In some of the fits the eyes were staring and face flushed; in others the face is unchanged, the patient appearing as though asleep. The attacks took place whether recumbent or erect, and were preceded by a feeling of numbness. Attacks of pain across the epigastrium, irrespective of food, sometimes relieved by eating. This pain, when occurring under the right ribs, always preluded a

faint. At other times, before a fit, he experienced an indescribable feeling at the epigastrium, as though vomiting would relieve him. The pulse during eighteen months varied little from 32; once it was 19; twice 24, and twice 26; nine times only did it exceed 34; once rose to 43. Temperature on admission 98° to 98.4° in axilla. Later, temperature in mouth varied between 97.4° and 98°. Fundus oculi normal; pupils below average size, but freely dilatable under atropine.

For the rest, health fairly good, but markedly indisposed to exertion, and much wanting in physical and mental energy.

All treatment fruitless. Digitalis not only failed, but produced marked uneasiness; belladonna failed, bromides likewise; electricity had no effect.

CASE XCVI.—Case of Mr. Hodgson, who suffered from cardiac degeneration, had a pulse of 40, and referred the diminution in frequency to overwork.

Mr. Crompton, who refers to the above case, also mentioned a patient of his own who had a notably slow pulse for many years without affecting his health. This latter gentleman's son also had a slow pulse (*Med. Times and Gaz.*, vol. ii., 1877, p. 230).

CASE XCVII.—Dr. Archibald Hewan's own case. Twenty years before had studied greatly, pulse then 72 per minute; afterwards was 55, and eight years ago was 24; had never had a fit nor fainted, and could bear cold well; had rheumatic fever eight years before, when pulse did not rise above 32. Eight weeks ago had gout and rheumatic pains, when pulse rose to 64 and 68, after which it fell slowly to 32 and 28, where it remains (*Mo. Abst. Med. Sc.*, Philadelphia, 1874–75, p. 400).

The following additional references upon the subject of slow pulse are appended. The writer regrets that, for want of time, it has been impossible for him to examine them for incorporation in the present paper, but contents himself with the reflection that he has already reached the limit of endurance to the reader.

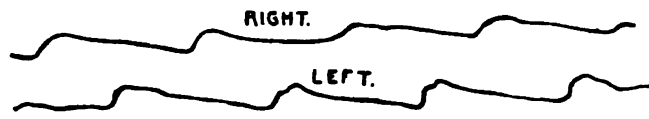
L'Union Méd., Paris, 1870, pp. 658, 659, L. Gros, "Du Ralentissement du Pouls les Britons."

London Lancet, vol. ii., 1872, pp. 913, 914, J. B. Yeo, "Production of a Remarkable Endocardial Murmur accompanied by Unusual Slowness of the Pulse."

CASE XCIV.—*Dr. James Russell's Case.*

March 3, 1877. Pulse 36.

CASE XCV.—*Dr. James Russell's Case.*



April 14, 1876. Pulse 34.

Dublin Quart. Med. Jour., vol. ii., 1846, pp. 73–85, W. Stokes.

Gaz. d. Osp. Milano, vol. vii., 1846, pp. 579–587, "Del Polso Raro e Monocroto," M. Alivia.

New York Medical Record, vol. xx., 1881, p. 670, "Case of Slow Pulse," J. Baranowitz.

New York Medical Record, vol. xx., 1881, pp. 533–535, T. A. McBride, "The Slow Pulse and Distances in the Rhythm of the Pulse."

Peoria Medical Monthly, vol. ii., 1881–82, p. 255, J. P. Walker, "Slow Pulse."

Berl. Klin. Wochenschr., vol. xxiv., 1887, pp. 72–74, "Pulsus Rarissimus," A. Frey.

Bull. Acad. Roy. de Méd. de Belg., Brux., 1887, 4s i., pp. 73–82, Rap de Hambarsin 21, Lebrun, "Un Cas de Ralentissement Permanent du Pouls avec Attaques Syncopales et Epileptiformes."

Mrstr. Mag. f. Laegendensh., Christiania, 1887, 4 ii., pp. 636–645, Holm, "Pulsus Rarus."

Mem. Soc. d. Sc. Méd. de Lyon, vol. xvii., 1877–78, 2e pt., pp. 98–100, J. Rendre, "Ralentissement Normal du Pouls."

Medycyna Warszawa, vol. x., 1882, p. 842, J. Polak, "Case of Great Intervals of Pulsation."

Mem. et Comp.-Rend. Soc. d. Sci. de Lyon, vol. xxi., 1881–82, pt. 2, pp. 84–87, "Cas de Ralentissement du Pouls" (Laure).

Bull. Soc. de Méd. d'Angers, 1884, N. S., vol. xii., pp. 34–38, Guérétin.

Gaz. Méd. de Picardie, Amiens, 1885, vol. iii., p. 54, A. Roux, "Deux Cas de Ralentissement du Pouls."

Deutsch. Archiv f. Klin. Med., Leipsic, 1888, vol. xlii., pp. 574–614, F. Grob, "Ueber Bradycardie."

Lyon Méd., vol. xliii., 1883, pp. 307–316, "Contribution à l'Étude du Ralentissement du Pouls," Chappet.

L'Union Méd., Paris, 1884, 3 s., vol. xxxviii., pp. 433–441, "Le Pouls lent bulbaire," R. Lonquet.

Gazz. Med. ilal.; prov. venete, Padova, 1882, vol. xxv., pp. 101–103, "Sul Polso Lento," U. Bassi.

"Ueber die Bedeutung des Pulsus Tardus," L. Traube, in his "Ges. Beitr. z. Path. u. Phys.," Berlin, vol. iii., 240.

Med.-Chirurg. Trans., London, 1841, vol. xxiv., pp. 76–82, "Case of Slow Pulse with Fainting Fits," etc., T. H. Holbertson.

So. Jour. Med. and Phar., Charleston, 1847, vol. ii., p. 34, "Case of Pseudo-Apoplexy with Remarkably Slow Pulse."

"Ueber Abnorme Verlangsamung der Pulsfrequenz," 8vo, Berlin, 1875, W. Hartog.

Jour. d. Connaiss. Méd. prat., etc., Paris, 1875, vol. xlii., pp. 177–180, "Ralentissement considérable du Pouls," etc., Langlebert.

Gaz. Méd. de Paris, vol. iv., 1875, 4e sér., pp. 292, 293, Cornil, "Ralentissement considérable du Pouls; Anémic," etc.

Jour. Hebdom. de Méd., 2d sér., 3, 1831, p. 164, "Note on Remarkable Slackening of the Pulse accompanied by an Abnormal Rhythm of the Beating of the Heart," Dr. Martin Solon.

Revista venita di Scienze Medichi, 1887, 7 Dr. D'Arman, Venice, "Contribuzione allo Studio del Polso raro permanente con accessi Sincopali od Epilettifori." An article of twenty-seven pages, discussing the subject of slow pulse and its causes. Report of eight cases, with three autopsies.

Case in which wine of colchicum in 5 drop doses reduced the pulse to 20 per minute (*Med. Times and Gaz.*, vol. ii., 1864, 607).

TREATMENT OF WHOOPING-COUGH BY EUCALYPTUS.

In the *Lancet* for November 2, 1889, Dr. W. W. Hardwicke writes that during an epidemic of whooping-cough, which recently occurred in his neighborhood, he was induced, by the continual failure of the various popular remedies, such as belladonna, atropine, alum, etc., to effect cures, to try the effect of the oil of eucalyptus. The fact of the extraordinary contagiousness of this disease seems to suggest that the true remedy for this disease is one of an antiseptic nature. This fact has been recognized for some length of time, and carbolic acid has been used for the purpose in various forms, with more or less success. But it must be acknowledged that not only is carbolic acid an imperfect antiseptic, but it is a dangerous drug, even in a diluted form, to be left about among children and nurses. Its offensive smell renders its use for any length of time undesirable. Eucalyptus oil is, on the other hand, a powerful antiseptic, being more than three times as strong as carbolic acid in preventing the development of bacteria, has not the caustic properties of the latter, and does not produce that irritation which the latter does, even when diluted, on the lips or mucous membrane. In combination with terebene the oil forms a mixture having a pleasant aromatic odor, somewhat similar to sandal-wood, exercising a sedative influence on the lining membrane of the air-passages, and possessing, besides antiseptic properties, the power of destroying the virus of the sputum, which is not only found clinging to the thickened and congested mucous membrane of the epiglottis, larynx, and bronchi, but is with every fit of coughing ejected by the mouth, with the possibility of infecting others. This sputum being crowded with bacteria and micrococci, it is upon the destruction of these with their extraordinary power of development and multiplication that our success depends. Dr. Hardwicke says, as a spray, a mixture, composed of two drachms of oil of eucalyptus, two drachms of terebene, one and a half ounces of rectified spirit of wine, is of value. The spray may be used half an hour before each meal and at bedtime, while internally he gives terebene in drop doses to a child from 2 to 3 years of age, in combination with two grains of carbonate of magnesium, and ten minims of compound tincture of camphor to one or two teaspoonfuls of water, repeated every three hours. The two former constituents to be triturated together, the magnesium being used simply as a carriage for the terebene, which is not miscible with water. The paregoric allays the irritability of the cough until the disease succumbs to the specific treatment. Dr. Hardwicke states that in every case where the above treatment has been properly carried out it has effected cures in about a fortnight.

The Therapeutic Gazette

EDITED BY

ROBERT MEADE SMITH, A.M., M.D.,
Professor of Comparative Physiology, University of Pennsylvania,

PHILADELPHIA.

GEO. S. DAVIS,
Medical Publisher, Box 470,
DETROIT, MICH.

Philadelphia, 714 Filbert Street.

SUBSCRIPTION RATES FOR 1890.

(Journal increased to 72 pages.)

THERAPEUTIC GAZETTE (postage included).....$2.00
THERAPEUTIC GAZETTE with MEDICAL AGE..... 2.50
THERAPEUTIC GAZETTE with AMERICAN LANCET 3.25
THERAPEUTIC GAZETTE with AGE and LANCET... 4.00

Foreign subscriptions may be ordered through our agent in England, Mr. H. K. Lewis, Medical Publisher and Bookseller, 136 Gower Street, London. Price 10s. Remittances may be made either by Postal Order or Stamps.

Price to Foreign Subscribers direct (postage included), $2.50 (10 shillings). English postage stamps received on remittances.

Editorial communications should be addressed 332 South Twenty-first Street, Philadelphia. Articles intended for the Original Department of the GAZETTE will be accepted only with the understanding that they are contributed to it exclusively.

Business communications should be addressed to the Publishers.

Leading Articles.

THE ACTION OF SULPHONAL AS A HYPNOTIC.

IT almost seems as if the fate of sulphonal was to be a repetition of what has been so often noticed in new drugs. At first received with universal acclamation to finally become more and more distrusted, and at last discarded as useless. We do not maintain that the latter is to be the fortune of sulphonal, but the cases where its results are unsatisfactory, or where its effect is even dangerous, are accumulating only too rapidly. Dr. Marandon de Monthyel has recently published a number of observations which are extremely unfavorable to sulphonal, and his results have been recently confirmed by Professor Mairet (*Deutsche Medicinische Wochenschrift*, October 3, 1889). The latter has recently published an exhaustive essay upon the action of sulphonal, and he found that in doses of 30 grains in only thirty-three per cent. was the action at all satisfactory; upon the second day, or third or fourth day, toxic symptoms appeared, so that the use of the remedy had to be suspended; this state of affairs was especially marked when doses of 45 or 60 grains were given to produce sleep. Dr. Marandon de Monthyel used the remedy in eighteen cases of insanity and seven cases of paralysis agitans, doses of 30 grains being given; of these cases, in only twelve, or less than half, was the result favorable, while in the cases where sleep was not produced symptoms of poisoning were decidedly marked. In fact, the author states that his personal experience has been that with doses of 30 grains only forty-four per cent. of his cases will be free from symptoms of poisoning.

An especially annoying feature in the action of this drug appears to be that, while in some cases large doses may be taken without producing any effect, in others small doses produce the most violent toxic symptoms; while again even those cases which in some instances have proved themselves unaffected by large doses of the remedy, and in whom it may have previously produced satisfactory sleep, suddenly will be violently poisoned by doses which they had taken previously with impunity. Exhaustion, diarrhœa, vomiting, and collapse follow doses which had previously been almost inactive. In one instance, a patient was affected with sudden and violent congestion of the lungs, a fact which is confirmed by the experimental observation that the lungs and other viscera are in a state of violent congestion after poisoning with sulphonal. As it is, Dr. Mairet no longer attempts to give doses of 60 grains two days in succession, since he states that he is confident that doses which are capable of producing sleep will nearly always produce symptoms of intoxication if persisted in.

We may here allude to the results of Jastrowitz, already referred to, who called attention to the cumulative action of sulphonal, referring to the necessity of interrupting the use of this drug in treating chronic insomnia, so as to allow for the elimination of the successive doses of sulphonal. Jastrowitz also has noticed unfavorable symptoms following the use of sulphonal, such as muscular weakness, disturbance of sight, ringing in the ears, and collapse. We can hardly offer any explanation of these effects, which are only now noticed, and seem to have escaped entirely the attention of the earlier users of this remedy. Other cases of poisoning from small doses of sulphonal are published in the *Medical News*, August 10, 1889, when there was a fatal issue, and in the *Medical Press* for September 11, 1889, when delirium was produced.

Fortunately but few instances of any unfavorable action from sulphonal other than giddiness have been reported, although re-

cently, it would appear, a number of cases have occurred in which sulphonal seemed to disturb the cerebral cortical functions, especially as evidenced in the production of ataxic movements. Thus, Dr. Garnier, in the *Archives Medico-Psychologiques*, referred to two cases in which the locomotion was disturbed through the use of sulphonal, although it was impossible to determine as to whether the result was attributable to the direct influence of sulphonal on the cortical motor centres, or whether this was due simply to vertigo, and he refers to the difficulty of satisfactorily settling this point. He further quotes Kast as having noticed in dogs a loss of power in the posterior limbs shortly after the administration of the drug, comparable to that produced by the removal of the motor portions of the cerebral cortex; while Otto has referred to cases in which walking was rendered difficult or impossible after the use of 75 grains of sulphonal.

In the *Lancet* for November 23, 1889, Dr. R. Percy Smith publishes five different cases in which there was temporary loss of power in the lower extremities as a consequence of the administration of sulphonal, 30 grains being the dose usually employed. From a study of these cases, Dr. Smith concludes that the loss of power was not due merely to giddiness, but to some interference, probably, with the cortical functions. In two cases the patients themselves were confident that their condition was not merely due to giddiness, and in the one case the staggering and apparent loss of power were associated with a complete mental confusion. In all cases suspension of the administration of the drug was attended with an immediate disappearance of the unpleasant symptoms, and in some the readministration produced no bad effects. In the same number of the *Lancet*, notes on the use of sulphonal are published by Dr. Henry Sutherland, who finds, from his experience, that sulphonal, while most valuable as a sedative in chronic insanity with recurrent attacks of excitement, is a most valuable remedy in producing sleep shortly after its administration, and its good effects are often seen two and three nights after its administration; but in continued excitement its action is even apparently injurious by increasing the state of excitement in the patients on the following day. Mr. C. Knox Bond, in the same issue of the *Lancet*, advocates the use of sulphonal in the insomnia of typhus (typhoid?), (see p. 67 of this issue of GAZETTE). He states that he has employed it in two or three cases in which sleeplessness was a prominent symptom, and every time with satisfactory results.

To conclude this list, which we have not attempted to make a complete one, we would add that Dr. Knoblauch (*Therapeutische Monatshefte*, November, 1889), the assistant of the neurological clinic in Heidelberg, in an address given before the Neurological Section of the Association of Naturalists, recently held in Heidelberg, goes so far as to agree with the statement of De Monthyel that sulphonal is not a remedy but a poison, basing his conclusions on the facts observed by himself and others, that in many cases the hypnotic action of sulphonal persists until the following day; that it cannot be evoked with certainty in any given time; that the doses which are sufficient to produce sleep vary in different individuals, and even in the same individual at different times; that in many cases marked symptoms of poisoning occur even with doses which are too small to produce sleep. Dr. Knoblauch probably takes an extreme ground, but the testimony as to the inconveniences, and, indeed, almost the dangers, attending the use of sulphonal is so rapidly accumulating, that it is evident the field of usefulness of sulphonal is becoming greatly restricted.

LEAD-POISONING.

READERS of the THERAPEUTIC GAZETTE will remember that a little over a year ago we editorially discussed some remarkable papers by Dr. James J. Putnam. He, in these papers, appears to justify the conclusion that the metal lead is an occasional cause of neurasthenia, with or without tremors resembling those of paralysis agitans, of chronic myelitis; also that lead is not to be detected in the urine of more than fifty per cent. of people who have no presenting symptoms of disease, and that when any considerable amount of the lead is found, it is presumptive evidence that any symptoms which are present are produced by the poisoning. Dr. Putnam, in the *Boston Medical and Surgical Journal* of November 28, 1889, publishes the result of a second investigation, especially made to determine the frequency with which lead is to be found in the urine of perfectly healthy persons. The urine of thirty medical students was analyzed, and slight traces of metal were found in three cases, or ten per cent. The urine

of thirteen patients in the Good Samaritan Hospital suffering from pulmonic troubles was chemically investigated, and lead found in three instances. A number of cases suffering from various diseases were further studied, making in all fifty-seven analyses of urine taken from persons who had no symptoms which could apparently be attributed to the presence of lead. We have sixty-eight cases, in twelve of which lead was detected.

If, to compare with this group, we add together all the cases from the two investigations of which it cannot be said positively that they presented no symptoms which would commonly be said to be attributed to lead, we have a total of one hundred and seventeen, in sixty-two, or fifty-three per cent., of which lead was found. Even if we add in the cases presenting no characteristic symptoms, raising the total to one hundred and eighty-six cases, we still find that lead was present in forty per cent., or more than twice the proportion found in the first group. This comparison makes it probable that lead is at least a partial cause of a variety of symptoms not usually attributed to that cause.

Case.	Symptoms.	Former series.	New series.	Total.	Lead present.	Lead absent.	Per cent. in which lead was present.	
1	No symptoms not attributable to other causes	11	57	68	12	56	17.6	
2	Fine muscular tremor; nervous debility	8	2	11	11	0		
3	Chronic multiple neuritis; neuritis with chronic and subacute myelitis; spastic paraplegia; multiple sclerosis	19	24	43	27	16		
4	Progressive muscular atrophy	4	1	5	0	5		
5	Cerebral and cerebro-spinal cases	7	2	9	7	2		
6	Epilepsy	8	4	12	4	8	53½	40
7	Sciatica	2	1	3	0	3		
8	Acute polio-neuritis	0	2	2	0	2		
9	Digestive disorders	0	2	2	0	2		
10	Simple anæmia and debility	0	4	4	0	4		
11	Remaining cases from former series	26	...	26	13	13		
12	Rubber-workers	0	8	8	5	3		
13	Optic neuritis	0	2	2	2	0		

No statistical importance is to be attached to these ratios, except as stated in the text.

We do not propose at present to follow Dr. Putnam in his discussion of the pathology of lead-poisoning and of the relation of the metal to obscure nervous affections, but the question of the diagnosis of lead-poisoning is of such immense practical importance that it can hardly be passed by in silence.

Dr. Putnam asserts that he regards the finding of traces of lead in the urine as of no necessary importance from a diagnostic point of view. Dr. Gowers thinks its significance is much less than that of the lead line, but we can confirm from personal experience the statement made by Dr. Putnam that the lead line is occasionally absent in cases of severe typical lead-poisoning, and we think that whenever lead is found in the urine of a person suffering from obscure symptoms not otherwise to be accounted for, the case may be provisionally considered as one of lead-poisoning, and treatment be instituted. One of the most surprising results of Dr. Putnam's investigation is the extraordinary proportion of cases in which he has found lead in the urine. The proportion is, indeed, so extraordinary that it suggests that his results must be looked upon as local, due to some locally acting cause, which makes the people in the district studied especially liable to suffer from lead. An analysis made by Dr. E. M. Greene, in accordance with Dr. Putnam's suggestions, shows that this surmise is correct. He examined sixteen specimens of water drawn from different places in Boston, in each case the water having been carried from Lake Cochituate and delivered in lead pipes. Only one of the sixteen specimens was free from lead, and some of them contained about one grain of the metal to a gallon.

It seems to us that the people of Boston are suffering from wholesale poisoning by the use of lead-impregnated water, and that it is impossible to tell how wide and deep is the stream of invalidism that results therefrom. We do not believe that results parallel to those obtained by Dr. Putnam could be obtained in this city or any other healthy locality.

THE USE OF BROMIDE OF RUBIDIUM AND AMMONIUM IN EPILEPSY.

IN the October issue of the GAZETTE, 1889, we referred to some experiments which had recently been made by Laufenlauer as to the use of the bromide of ammonium and rubidium in the treatment of epilepsy. The results which he obtained were encouraging enough to point to the advisability of an extension of his studies, for although he seemed to prove that the value of this double salt was quite equal to that of the bromide of potassium, yet the number of his cases appeared too small to permit of any reliable deductions from them. Stimulated by his success, however, Dr. Rottenbiller (*Centralblat für Nervenheilkunde*, November, 1889) has undertaken a series of experiments with this salt in the hospital in Buda Pesth, to determine its value in the treatment of epilepsy. Even in these cases, however, the number of patients was only five, and although his report by itself would be of but little value in determining the status of this new remedy, yet, taken in conjunction with Professor Laufenlauer's results, the confirmation which is expressed, added to that of Dr. Laufenlauer's, is an additional testimony of the probable future of this drug. In each of these cases the administration of 180 grains in divided doses of the bromide of rubidium and ammonium relieved in every instance the number of epileptic attacks, proving itself in this dose to be more energetic than the bromide of potassium in similar amounts. No after-effect of any kind was noted, although this is, perhaps, attributable to the fact that, owing to the high price of the remedy, treatment was not persisted in. His results seem to show that in certain instances this double salt possesses the power of reducing the frequency of epileptic attacks. He does not say that in any case it cured; it is not stated as to how long the improvement persisted, or as to whether the result had been obtained in cases where potassium bromide had failed. It is evident, therefore, that still further study is necessary before the value of this remedy can be determined.

HYPNOTISM.

AT a recent clinic at the University Hospital held by Professor H. C. Wood, two cases were shown that had been cured by hypnotism. One of these cases had suffered from almost complete paraplegia, motion being reduced to slight alterations in position of the feet when lying in bed. The other patient had suffered from incessant tremors of the right hand, exactly simulating paralysis agitans. The doctor stated that before he had commenced treatment of these cases, he had made up his mind that the diseases from which the patients were suffering was hysterical. He further said that the physicians of France, England, and Germany appeared to be almost unanimous that the good results were due to suggestions made during the hypnosis, the accepted theory being that suggestions made during the hypnotic state are capable not only of affecting the actions of the individual during the hypnotism, but also of affecting the functions of organic life so as to alter diseased process without the patient being conscious that any suggestion has been made.

The absence of control experiments was also commented upon, and the statements made that in neither of the cases before the class, although cures had been rapidly obtained, had any suggestions whatever been made during the period of hypnosis. These important observations show that the cure produced by hypnotism alone is not the result of the suggestions made, or, at least, that it is not always the result of the suggestions, and make it probable that the good effects obtained are simply due to mental influence, as was indicated in the editorial which we published in the THERAPEUTIC GAZETTE of September 15, 1889.

AN IMPORTANT WORK.

WE are glad to welcome to our editorial table as a very important pharmacological contribution the new brochure—No. 3 of the Arbeiten des Pharmakologischen Institutes zu Dorpat—put forth under the auspices of Professor R. Kobert. It contains about one hundred and fifty pages, which are occupied by two papers. One of these is a research by Mr. E. Kiwull, of Riga, upon some preparations of "Solvine," and the other, a study by H. Stillmark and Professor Kobert himself, on "Ricin." Mr. Kiwull reaches the conclusion that the pharmacological and physiological properties of solvine are very much like those of saponine, which body it also resembles in some of its physical characteristics, especially in making a soapy solution. He confirms the original caution of

Professor Kobert that it is necessary to use great caution in employing solvine as the basis of external applications, contrary to the assertions which have been made in some of the American journals that it might be used in this way without fear. It is evident that solvine is far from inert, that it is really unfit to be used as a vehicle, although it possesses locally stimulant properties which may make it useful in certain skin-diseases. Until careful clinical studies are made with it, however, its application in therapeutics must be considered experimental.

The investigation upon ricin is a wide-reaching one, taking into consideration the activities of the very many euphorbiaceous plants, and being chemical as well as physiological.

The author reaches the conclusion that ricin is an albuminous body, one of the so-called phytalbumoses, and belongs to the group of unformed ferments, and has nothing to do with the glucosides and acid anhydrides. As obtained from the *Ricinus communis* it is a very poisonous substance, violently irritating, causing erosions and ulcerations to the mucous membrane of the gastro-intestinal tract, when given either by the mouth or intravenously. These erosions are believed by Herr Stillmark to be the result of coagulation of the blood and consequent thrombotic arrests of circulation in the intestinal capillaries. A number of cases of poisoning by ricin are given, and the conclusion reached that poisoning with this impurity in castor oil is now more frequent than formerly, a conclusion, however, which does not seem to us justified by the apparent increase of the poisoning, said increase being probably due to the great increase of population in civilized countries and to the growing habit of reporting cases.

Reports on Therapeutic Progress.

CHOLECTOTOMY.

At the meeting of the Clinical Society of London, held October 5, 1889, MR. MAYO ROBSON, of Leeds, read a paper upon fourteen cases of cholectotomy which he had performed, eleven being for gall-stones, one for empyema of the gall-bladder, and two for distended gall-bladder; due in the one case to cancer of the head of the pancreas; in the other to cancer of the bile-duct (*Lancet*, November 2, 1889). All the patients operated on for gall-stones had recovered. Of the other cases, the patient suffering from empyema of the gall-bladder was operated on when apparently dying from acute peritonitis, but after the operation she made a good recovery except for a biliary fistula which was afterwards closed by cholecystenterostomy. The case of cancer of the pancreas had succumbed on the eighth day to a constant oozing of blood from the interior of the gall-bladder, and from the suture punctures. It commenced on the day following the operation, and was apparently due to the altered condition of the blood, brought on by persistent jaundice of several months' duration. In the case of cancer of the bile-duct, although there was intense jaundice, there was no subsequent bleeding or other complication; this might possibly be due to the arrest of hemorrhage at the time of operation by ligatures instead of by forcipressure. Of the cases operated on for gall-stones, six patients had sought advice in consequence of the presence of a tumor combined with the usual symptoms; in these cases, Mr. Robson pointed out that the operation was usually much simpler than in the other group, where no tumor could be felt, although in one, where an apparently solid tumor was exposed which was due to the matting of the viscera surrounding the gall-bladder, so that the mass appeared at first to be a malignant growth, it was found impossible to shut off the general peritoneal cavity by suturing the parietal peritoneum to the gall-bladder, as it was practically destroyed by suppuration; and drainage with sponge-packing had to be resorted to to prevent general peritoneal infection. Dr. Churton had pointed out to Mr. Robson that he had previously seen in the post-mortem room a similar condition of affairs, where suppuration of the gall-bladder had led to the formation of a tumor resembling a malignant growth, but where an exploring-needle pushed through the overlapping edge of the liver had revealed the presence of pus. Of the cases, five in number, operated on, on the strength of symptoms alone, Mr. Robson remarked that he believed many such cases of frequently recurring biliary colic would in future be saved the intense suffering and the many dangers of their disease by timely operation. He pointed out that these operations were not always easy, as the gall-bladder was frequently very small, and could with difficulty be brought to the surface; in fact, in his fourteenth case the gall-bladder was shrunken to the size of the last

joint of the thumb, and was lying very deeply under cover of the liver, so that when he had incised it and removed several gall-stones from the duct, the lower part of the opening could not be made to reach the parietal peritoneum, and a piece of omentum was brought up and sutured on the one hand to the gall-bladder, and on the other to the parietal peritoneum, thus shutting out the general peritoneal cavity. Mr. Robson thought that omentum grafting, first proposed by Dr. Sena for enterorrhaphy, but he thought not hitherto performed to surmount a difficulty of the kind above related, would in future often be found very useful in abdominal surgery, and perhaps especially in such cases as he had mentioned. With regard to the danger of biliary fistula, Mr. Lawson Tait had remarked that "biliary fistula after cholecystotomy could only be permanent when the operation happened to be performed at a time when a gall-stone was impacted in the common duct;" the author of the paper said that he believed this to be true generally, as proved by Mr. Lawson Tait's cases, but in the only case of biliary fistula which had followed the operation in his own hands, the cause was other than gall-stones, as when he had performed the operation for the closure of the fistula, he had very carefully examined the whole length of the common duct without finding an obstructing calculus. In conclusion, he remarked that he believed that with due care cholecystotomy, in the absence of malignant disease, was a procedure attended with comparatively little danger, and that the great relief which the operation conferred amply compensated for the attendant risks.

THE DIAGNOSIS OF PYOSALPINX.

At a meeting of the American Association of Obstetricians and Gynæcologists, held September 19, 1889, in Cincinnati, DR. R. B. HALL, of Cincinnati, read a paper entitled "Some Points in the Diagnosis of Pyosalpinx." The author believes the importance played in the production of suffering by this disease has not received the attention which it merits. The general practitioner sees and treats the great majority of these cases before they are seen by the operator, and if it is hoped or expected to afford relief to a great number of suffering women all over the land, the subject of diagnosis must be better understood than at present. The importance of septic infection in the production of inflammatory disease of the uterine appendages is the cause of these diseases in a large percentage of cases. Repeated attacks of acute exacerbations from perhaps trivial causes, finally produce complete closure of the ends of the tubes. As a consequence, the normal secretions of the tubes soon become pathological, and by repeated attacks of inflammation may become changed into pus, producing the typical pyosalpinx. The speaker is convinced that this affection frequently follows puerperal diseases and gonorrhœal infection, but does not consider these the most common causes of the disease. He believes pyosalpinx to be contracted in two different ways: (*a*) By a chronic process, causing dropsy of the tube, which, by repeated attacks of inflammation, is changed to pus; (*b*) it may be rapidly produced by an acute process following gonorrhœa and puerperal disease. A history of almost constant suffering for years, directed to a certain locality, perhaps originating in an attack of pelvic or abdominal inflammation, connected or not with parturition. To this may be added sterility, and we have a most important aid to a correct diagnosis in the history of the case. Diseased appendages can usually be recognized by a vaginal examination, yet this is not always possible. In most cases it is difficult, and in many impossible, to make out the exact disease of the appendages except in cases of pyosalpinx. We usually have an irregular ovoid tumor, showing swellings and contractions not found in any other pelvic tumor but tubal collections. This tumor is generally of small size; it may be in the retro-uterine space extending towards the pelvic brim on the one side, with a second tumor on the other side higher up; or it may be distinctly felt as a narrow furrow, which is occasioned by a portion of the uterine end of the tube remaining undistended by pus, while the distal end of the tube is enlarged to form the tumor. This furrow is not so plainly felt in those cases where there is a periodical discharge of the pus through the tube into the uterine cavity. This is a very valuable sign to help in making a diagnosis. If we have all the other symptoms of pyosalpinx, with a history to confirm them, where we can feel the enlarged tube before a discharge of pus from the uterus, and immediately after the discharge has occurred we find that the tube has collapsed, then we have proof positive of the existence of pyosalpinx.

If the previous history of the case be care-

fully learned, and given due weight and consideration, the author believes the diagnosis is not so difficult as usually thought. The uterus is more or less fixed and misplaced. In the majority of cases seen by him there has been pain during defecation, particularly where the tumor occupied the retro-uterine space. Most cases gave a history of dyspareunia. If pain has long been a prominent symptom, and it is evident the tube contains pus, the case must be looked upon as serious and demanding prompt relief. Delays are dangerous, as the bursting of the tube may cause fatal peritonitis, and escape should be afforded the offending pus by removal of the tube.—*Medical Record*, October 19, 1889.

THE TREATING OF PNEUMONIA BY THE ICE-BAG.

At a meeting of the Harveian Society of London, held on October 17, 1889, Dr. Lees read a paper upon this subject (*British Medical Journal*, October 26, 1889). Four years ago he published an account of "Two Cases of Broncho-Pneumonia treated with Bleeding and Ice," and since that time he had tested the use of the ice-bag in pneumonia as opportunities occurred. He had found so great benefit from its use, that he had mentioned the matter two years ago to some of his friends, who had large opportunities of clinical observation in hospitals and elsewhere, and had asked them to give the ice-bag a fair trial. He believed that they would be able to confirm the results at which he had arrived. It was necessary to be cautious in drawing conclusions about the effect of remedies in pneumonia, because of the "crisis" which usually occurred as a part of the natural history of the disease on any day from the third to the tenth. The use of cold compresses to the chest in pneumonia was advocated twenty years ago by Niemeyer. Dr. Lees claimed that the ice-bag produced a much more powerful local impression. Niemeyer confessed that some patients found the compresses so disagreeable that he had been obliged to give them up, but Dr. Lees had found that the patients usually liked the ice-bag. He then related the main facts of eighteen cases, under his own care, in which this treatment had been tried, grouping them according to the effect apparently produced. 1. Cases in which immediate final arrest of the pyrexial process followed the application of the ice-bag. Three cases were included under this head; all were mild. 2. Cases in which immediate arrest of the pyrexial process followed the application of the ice-bag, and a relapse followed its removal. Two cases were related under this head. 3. Cases in which immediate arrest of the pyrexia followed the use of the ice-bag; a relapse followed its removal, and a second fall occurred when the ice was reapplied. This included three cases. 4. Cases in which rapid fall of temperature followed the application of ice, but relapses (apparently due to implication of fresh portions of lung) occurred while the ice was being continuously applied. This comprised two cases. 5. Cases in which no immediate arrest of the pneumonia followed the application of the ice, but obvious relief to symptoms resulted. This comprised four cases. 6. Cases in which no very obvious benefit resulted from the use of the ice-bag. This comprised two cases. In reviewing these cases, it was pointed out that none of them died, though two at least would certainly have died without the ice-bag, and two others would almost certainly have done so. In the great majority remarkable improvement followed the use of the ice-bag. The reduction of temperature, which usually occurred at once, was often very striking. Instead of the "entire degree" claimed by Niemeyer as the result of the use of cold compresses, it frequently amounted to 3° or 4°, or even more. If a subsequent rise occurred, it was usually to a decidedly lower level when the ice had been permanently applied, and though when the ice had been removed, the subsequent rise often passed the original height, it was rapidly again reduced to a second application. These results were specially observed in children, perhaps partly because their temperature was more easily affected than that of adults, and partly because the ice-bag covered a larger proportion of their smaller chest-wall. But the improvement was not confined to a mere reduction of temperature. In many cases there was a striking arrest in the development of the physical signs and also of the general symptoms, and it was particularly to be observed that in some instances this improvement began an entire day or more before the crisis, and was far advanced when that event occurred. Occasionally, in slight cases, the application of the ice had been followed by the immediate complete termination of the disease, but no stress was laid upon this because of the possible fal-

lacy of synchronism with the crisis. But in the two cases of broncho-pneumonia seen in young children in their very earliest stage, it certainly seemed that the disease was promptly cut short. Dr. Lees had never seen any harm done by the ice-bag in pneumonia, though in one case of typhoid he had seen shivering and some lividity produced by it; this, however, was easily remedied by warmth and brandy. Similar symptoms might no doubt be produced by the incautious use of ice in pneumonia; they were the more likely to happen the younger the patient, and especially in feeble and rickety children. They might almost always be prevented by a sufficiently careful observation of the temperature. It was a good rule to ascertain this hourly, and to remove the ice when it fell to 100°, replacing the ice if a rise to 102° followed. In some cases it was wise to apply warmth to the feet, or even to the abdomen, at the same time that the ice-bag was applied over the inflamed lung. It was well, also, to keep the ice away from the præcordial region, to prevent any depressing action on the heart, similar to that demonstrated by Dr. Brunton on the excised heart of the frog. Dr. Lees did not advocate the use of the ice-bag in pneumonia occurring in very feeble children, or in aged persons, or in adynamic conditions generally. But, with these exceptions, he thought there was reason to conclude that its employment had a distinctly curative influence, that it did not simply reduce temperature, but directly tended to repress the inflammatory process in the lung, with more or less success, according to the severity of the case. He concluded with a reference to a note published by Dr. Angel Money some months ago, and to the results obtained by the ice-bag treatment in pneumonia by Dr. Fieandt, a Finnish physician.

Dr. Goodhart had for eighteen months used no other application than the ice-bag in cases of acute pneumonia, and he gave an account of eighteen cases thus treated. A good result was obtained in eight cases, the temperature falling promptly, and convalescence being rapidly established. In seven cases it was doubtful if the treatment had had any effect whatever, while in three cases symptoms of collapse were produced of a very temporary nature, for it subsided as soon as the ice-bags were removed. It was difficult to eliminate the question of the natural crisis of a pneumonia having coincided merely with the application of the ice, but it was also possible to underrate the value of any treatment because of the presence of pleurisy, which interfered with the beneficial results of the remedy. Dr. Goodhart, however, concluded that there was no danger in applying this treatment, such collapse as might occur being easily detected and remedied by brandy and warmth to the feet, and by avoiding its use in patients under 2 years of age. He himself did not think that collapse was increased by the application of cold over the cardiac region. Moreover, he believed that warm applications were greatly overdone, and the ice-bag treatment was a useful alternative.

Dr. Sturges had had but little experience of this mode of treatment; nevertheless, his conclusions were rather those of Dr. Goodhart than of Dr. Lees. All the cases that Dr. Lees had described were of young persons, and the mortality in these was always very small. In children it was especially difficult to decide between broncho- and croupous pneumonia. Broncho-pneumonia was dangerous, but croupous pneumonia in children was very rarely fatal. Three cases described by Dr. Lees were of broncho-pneumonia, and in these ice and bleeding had been very efficient in relieving the patient. These were the most important cases described, and Dr. Sturges thought the treatment most likely to be of use in broncho-pneumonia. In a case of lobar pneumonia in the Westminster Hospital under Dr. Donkin, the temperature rose to over 106°, and there was great prostration. The ice-pack was applied, and a recovery ensued. Dr. Sturges expressed the view that lobar pneumonia, by its nature, was such that it was impossible to say that any remedies were successful in curing the disease. The late Dr. Hughes Bennett had reported over one hundred cases of pneumonia, some in elderly people, with a mortality of only five per cent. Pneumonia and typhus, in regard to the influeuce of remedies, were much alike. The temperature, delirium, and headache were much relieved by drugs, and the patient made comfortable. In this way ice was certainly of use, as Dr. Sturges had himself observed, but he doubted if the evidence was yet sufficient for them to say that ice arrested pneumonia. He doubted also if it was, as a rule, a great good to shorten the pneumonia. In the pneumonia of drunkards, however, the inflammation was very destructive, but this was a very different disease, and it was especially doubtful here if ice would be of any use.

Dr. Coupland had tried the ice in a few cases in young people. He was satisfied with the treatment on the whole, and had had no

ill results. He also doubted if the treatment had shortened the cases, but it had certainly relieved the symptoms.

Dr. Angel Money made a sharp distinction between two forms of pneumonia. He would not, for instance, use the ice-bag in what he called epileptic pneumonia, styled by the French "herpetic pneumonia." Here the onset was so sudden, the course so definite, and the sudden termination so certain, that the disease resembled an epileptic fit. In other cases, however, the ice-bag was of great value, though he did not say it curtailed pneumonia. It relieved the patient, and it was safe in application. He had had a very extensive experience of the ice-bag treatment, and he would mention one case in particular of alcoholic pneumonia, where he had made use of ice- and the wet-pack with great relief to the symptoms, but without saving the patient's life.

Dr. Sidney Phillips had used the ice-bag himself, and seen it used much by Dr. Wilson Fox. The temperature was undoubtedly lowered by the ice-bag, but it might for this purpose be applied to any part of the body. An objection to the ice-bag was that on its removal the temperature again rose, and sometimes to a higher degree than before. This was the case with all antipyretics, and it was doubtful whether it was desirable to attempt a lowering of temperature by such means, unless it had attained a very high degree. The ice-bag scarcely shortened the disease.

Dr. Tirard had tried the ice-bag treatment in the Evelina Hospital. Of six cases thus treated, three were benefited, in the other three alarming collapse resulted. In six other cases not treated by the ice-bag, and also without poultices, the course of the cases was always good. Dr. Tirard hesitated to accept all the good promised from the ice-bag; comfort was increased, but the disease not shortened.

Dr. Lees, in reply, said it was certainly difficult to arrive at the true conclusion as to a particular remedy. Dr. Lees thought it very desirable to cut short the disease if possible. Lobar pneumonia in young children nearly always got well, but some cases did not, and the two cases of undoubted lobar pneumonia which he had mentioned were specially dangerous, and he believed would not have recovered if left to themselves. He hoped, now that it had been shown that no danger resulted from adopting this treatment, other observers would be induced to give it a trial and record their experience.

THE PHYSIOLOGICAL ACTION OF THE IODIDE OF POTASSIUM.

At the meeting of the French Academy of Medicine, October 15, 1889, M. Trasbot read a paper upon the physiological action of iodide of potassium, which contained results which have, as yet, apparently escaped notice (*La Tribune Médicale*, October 17, 1889).

The writer found that the iodide of potassium produced acceleration of the pulse and marked vascular dilatation, which leads to an abundant secretion from different glands. Further, Trasbot claims that iodide of potassium reduces the temperature one degree or more after its ingestion and slows respiratory rhythm. It is to these properties that the action of iodide of potassium in various affections of the bronchi and of the heart are attributable.

Professor Germain Sée has, likewise, recently completed an elaborate series of experiments as to the action of the iodide of potassium on the heart, his results being embodied in a communication before the French Academy of Medicine, and reported in the *Lancet* for October 26, 1889. He began with the remark that it is not sufficient to affirm that iodide of potassium has a tonic action on the heart, but it must be proved that it is so and how or why it is so. This the learned professor had endeavored to resolve by experiments in the laboratory and by clinical observation. In conjunction with Dr. Lapicque (his *chef de clinique*) his researches were first directed towards the modifications of the blood-pressure under the influence of the iodides of potassium and of sodium, to ascertain whether these salts produced a vaso-constriction or a vaso-dilatation, and also the conditions of the mode of their action. This was done by injecting into the saphenous vein of numerous dogs solutions of the iodide of potassium or of sodium in the proportion of 1 to 10 parts. The dogs were feebly curarized, and a registering manometer indicated the pressure in the carotid or in the femoral artery. It is known that the salts of potash excite the heart and the vaso-constrictor nerves, and raise the blood-pressure. Nothing of the kind takes place with the salts of soda. M. Sée had first verified that the radicle potassium conferred on its iodide the properties of the salts of potash. The following were the very interesting results obtained: When iodide of potassium or iodide of sodium is injected into the blood phenomena are observed which present two distinct phases. M. Sée designates the first "the phase of the alkali," and the second "the phase of the iodine." When

the iodide of potassium is employed, the phase of the alkali is distinctly characterized. The heart's beat is accelerated, the pressure raised, and the tracings present great oscillations, which are slow and regular. When the iodide of sodium is employed, the phase of the alkali is indicated by a very slight elevation of the pressure, slowing of the action of the heart, with occasional intermissions. On the contrary, the phase of the iodine corresponds with the injection of either of the two salts, and it is indicated by the pressure, which descends slowly, in a continued manner, and by the action of the heart, which is accelerated. M. Sée offers in explanation of this similitude that the iodide of potassium is decomposed, that the potassium is eliminated, and that the iodine is thus found in the blood, combined with the sodium, whatever be the iodide primarily injected. However that may be, Professor Sée's experiments seem to show that the iodide of potassium first determines phenomena of excitation, with the action of the heart accelerated, an elevated pressure, a manifest vaso-constriction; then follows vaso-dilatation, with low pressure, which is also determined by the iodide of sodium. In the vaso-constriction, with elevation of pressure, and the strengthening of the heart due to the potassium, the vaso-dilatation and lowering of the pressure due to the iodine, we have, says M. Sée, the explanation of the effects of the powerful action of the iodide of potassium. The vaso-dilatation explains the hyperæmia of the bronchial mucous membrane and the hypersęction which results from this drug, and which is so useful to asthmatics for getting rid of viscous secretions. It explains the pulmonary hyperæmia which results from the venous stagnation in cardiac subjects. It also explains the antidyspnœic power of the iodide of potassium in facilitating the circulation in the medulla, and consequently restoring it to its normal functional activity. Immediately the paroxysmal or continued dyspnœa, the fits of suffocation, etc., completely disappear. The vaso-dilatation finally explains how the heart becomes freed from the obstacles which the tonicity of the arterial vessels presents to it, how the coronary circulation becomes more free, and how the heart becomes re-enforced and beats with energy. On the other hand, iodide of potassium primarily strengthens the heart and the pressure. Hence M. Sée, comparing its action with that of digitalis, and studying the toxicity of the salts of potash, so exaggerated by physicians, has given it the name of "digitalic poison,"—that is to say, beneficial. It results from these considerations that iodide of potassium is applicable to the greater part of the diseases of the heart and of the coronary vessels. Useful in the most diverse lesions, M. Sée would condemn it only when it determines hemorrhages or permanent gastric iodism. It is not only useful against dyspnœa, it is still more so in many other cases, and M. Sée explains how and why it is so. Iodine reduces the fatty element in fatty degeneration of the heart. In fibro-adipose degenerations, in sclerosis, one cannot expect the reduction of the transformed tissues, but the muscular fibres which have quickened their circulation remain and are consequently improved in their function, whence the indication for iodide of potassium in all cases of degeneration. If the heart be weakened from overwork, or be in a state of asystolism, iodide of potassium renovates the weakened or distended tissues of the heart. If the left ventricle be hypertrophied, the most that the drug can do is to render the cardiac circulation more active; it cannot be injurious, as it does not reduce the muscular fibre. In coronary sclerosis (angina pectoris) it is useful in dilating the coronary vessels that have remained free and healthy; but this is not an arterial medicament in the denutritive sense. In cardialgia (false angina pectoris), where the pains are so severe, where the respiration is polypnœic, it has incontestable advantages combined with antipyrin or with inhalations of the vapors of pyridine. In Basedow's disease, or where there already exists a morbid vaso-dilatation, the iodide of potassium will be useless, or even dangerous. On the contrary, it is in aneurism of the aorta that it succeeds, although it is not by producing the coagulation of the blood, as is generally believed. But it is here, in particular, that M. Sée objects to the use of iodide of sodium, the employment of which nothing can justify.

COCAINE IN DIABETES.

In the course of diabetes it is no uncommon thing to find that glycosuria disappears on the development of an illness attended by febrile exacerbations. Towards the termination of diabetes, when phthisis is fully developed, we frequently notice that sugar disappears from the urine as the temperature becomes high. A high temperature, or, perhaps, more correctly speaking, the condition which causes the temperature to become high, is thus seen to be followed by a disturbance of the glycogenic function of the

liver. Is it possible that diabetes may be thus cured?

In the *Lancet* for October 12, 1889, DR. THOMAS OLIVER reports a case which appears to lend weight to such a probability. The case was that of a gentleman who had been several months under treatment for diabetes. Contrary to medical advice, he went to the races one cold day, where he got chilled. He had shortly afterwards a rigor, which was followed by an atypical pneumonia, attended by a considerable rise of temperature. The urine was now found to be quite free from sugar, and it remained free from sugar for more than a year, during which time the patient had quite regained, and felt himself in, his usual good health. From observation of these facts, it would appear as if the employment of medicines of the pyrogenic class might be followed by good results in the treatment of diabetes.

Accordingly Dr. Oliver was lead to try cocaine in the case of a man aged 43, who was admitted to the Newcastle Infirmary suffering from diabetes of five months' duration. His mother died in an asylum at the age of fifty; the rest of the family history is on the whole good. Five months previously he had noticed that he was passing too much urine, and that his thirst and appetite were excessive. Prior to this he had suffered much from anxiety and worry in business. His skin is dry, and shows here and there patches of psoriasis. Beyond puerile respirations at the apices nothing abnormal is detected in the lungs. His heart is healthy. In the abdomen nothing abnormal is noticed. He has, however, the gait of an ataxic. In walking he sways from side to side, is very unsteady, says he feels as if the floor were going up and down, feels giddy, and complains of numbness in the arms and hands. He does not fall, however, when his eyes are closed. Knee-jerks are present, but the response is slow and the amplitude large. Pupils are normal. He is the subject of delusions. When he awakes during the night he sees various objects with a peculiar color, particularly men wearing black hats and yellow tassels. Temperature normal. Is passing thirteen to sixteen pints of urine daily, acid, specific gravity 1034; no albumen. The amount of sugar varies from six thousand to seven thousand grains daily. He complains of a most obstinate constipation. His bowels are not relieved for six or seven days at a time, even though strong purgatives are employed, aided by enemata. This case was first treated by codeine, and, gradually increasing the dose, it was noticed that the urine fell to eight pints daily and the sugar to four thousand grains. Beyond this diminution in the amounts of urine and sugar eliminated daily, it was noticed that there was no improvement generally; the patient's symptoms remained the same. Dr. Oliver then determined to try cocaine. This he gave in ¼-grain doses three times a day. Until now one of the most difficult symptoms to treat the case was the obstinate constipation, but he had only taken the cocaine a few days when the constipation entirely ceased, and his bowels, which had hitherto refused to act to the strongest purgatives, now began to be moved once or twice daily. His nocturnal delusions also entirely disappeared. On ophthalmoscopic examination, Mr. Williamson, Dr. Oliver's colleague, reported the existence of a patch of old-standing choroiditis at the inner side of the disk of the left eye, and that the lens and disk of both eyes were normal. His temperature at this period ranged from 97° to 98°. When weighed, on April 29, it was found that six pounds in weight which he had lost had been regained, and that his bowels continued to act well. In May the patient seemed to be progressing very satisfactorily. Urine varied from six to eight pints daily, and the amount of sugar from eleven hundred to three thousand grains. His delusions had not returned, he was sleeping and eating well, he had lost his vertigo and the swaying movement when walking; also a painful sense of muscular fatigue, of which he had previously complained. Instead of constipation, his bowels were now moved sometimes twice and thrice daily. At this stage of his illness the patient was passing from four to five pints of urine, and the daily average elimination of sugar was eleven hundred and twenty grains. The specific gravity of the urine was a little over 1020. Thinking that the cocaine was acting too much upon the bowels, Dr. Oliver stopped it. No sooner was the cocaine stopped than almost immediately the urine rose to seven and nine pints daily, and the average amount of sugar to three thousand nine hundred grains. At this stage he injudiciously exposed himself, and caught cold, and had an attack of pneumonia. The feet and hands once more became œdematous, and the amount of urine fell to two pints daily. Later on albumen was detected in the urine, but it was only present for a few days. His temperature ranged from 98° to 101°; the dropsy par-

tially disappeared after the use of digitalis, but he died of syncope.

The points of interest in this case are these: First, the result of the administration of cocaine, the consequent total disappearance of a most obstinate constipation. Disappearance of a gait not unlike that of ataxia; of delusions, and a sense of muscular fatigue; the return of a feeling of improved health and strength, with a gain in weight; a marked diminution in the amount of urine excreted; a very decided fall in the daily elimination of sugar. Cocaine, however, failed to raise the temperature.

THE PHYSIOLOGICAL ACTION OF HYDROCYANIC ACID.

As is well known, hydrocyanic acid is one of the most active of all poisons, only 1 drop placed upon the conjunctiva serving to produce instant death in dogs. This lightning-like rapidity of action has stood largely in the way of the study of the *modus operandi* of this poison. In *La France Médicale*, October 5, 1889, DR. M. N. GRÉHANT reports the results of a number of experiments which he has made to determine the physiological action of this substance, employing the method of dilution recommended by Claude-Bernard, which consists in injecting successively into the blood amygdalin and emulsin, thus producing prussic acid; or by diluting it to a twenty-five per cent. solution with water. Dr. Gréhant writes that after slowly injecting into the jugular vein of a dog weighing sixteen pounds amygdalin in two and a half drachms of water, followed by injection into same blood-vessel of two drachms of milk of almonds, in about three minutes the animal was greatly agitated, in five minutes the cornea was insensible, the respiration was completely arrested, while the beats of the heart still continued for a few minutes. On opening the thorax ten minutes after the commencement of the evidences of the poisoning, the heart was found arrested. Artificial respiration was employed in one animal poisoned in the same manner, but without producing continuation of the beats of the heart. Dr. Gréhant then injected into the jugular vein 20 minims of the emulsion of hydrocyanic acid 100 to 400 of water. There was likewise considerable excitement, but the animal continued to breathe. Three minutes after the first injection 15 minims were again injected, and about a moment later there was a temporary arrest of respiration, although the heart was still beating and the cornea insensible. After five minutes and a half there was complete arrest of the respiratory movements, although the beat of the heart continued for four minutes longer. Experiments made upon frogs lead to the same result,—that is, arrest of the respiration before the heart was affected.

GLYCOSURIA.

At the meeting of the Medical Society of London, held October 28, 1889, DR. ORD read an interesting paper in regard to the presence of sugar in the urine (*Lancet*, November 2, 1889). He had published some time ago, in the St. Thomas's Hospital Reports, some notes on glycosuria in people past middle life, and he now added a few statements and remarks by way of supplement and illustration. The conditions which determined the presence of sugar in the urine in pathological quantity were: 1. Excessive afflux of arterial blood to the liver, and probably to other glycogenic organs. 2. Defective assimilation of glucose. 3. Defective formation of glycogen. 4. Instability of glycogen,—*i.e.*, the formation of glycogen which was too ready to change. 5. Excessive ingestion of glucose or glucose-yielding substances. Under the first head might be gathered several kinds of cause,—*e.g.*, (*a*) vaso-motor paralysis determined by disease, or injury of the medullary centre, or of the nerves connecting the centre with the arteries of the liver; (*b*) dilatation of the hepatic artery, not determined by disease of nerve-centre or centres, but by irritation of the liver, or determined by reflex action at the instigation of other organs, such as the stomach or by general disorder of the circulation; functional, as a result of nerve strain or excitement, functional and probably also dyscratic, as in gout; (*c*) possibly also compensatory arterial hyperæmia, balancing obstruction of the arterial circulation in other parts and systems of the body. Dr. Lauder Brunton, in his "Hand-Book for the Physiological Laboratory," gave an admirable summary of the various ways in which nerve sections and nerve irritations might produce glycosuria, and he stated that it was of great importance to note that section of the sympathetic cord or splanchnic nerves did not produce diabetes, although the vaso-motor nerves of the liver were thus divided, his explanation of

this being that as the vaso-motor nerves of the intestines were divided at the same time, so much blood went to the intestinal vessels that the circulation in the liver was not increased. If this explanation were admitted, it seemed reasonable to argue that an undue contraction of arteries in other parts of the body than the liver might determine an excessive blood-pressure in the arteries of that organ, and so set up glycosuria, the liver itself not being necessarily at fault. His notes afforded several instances showing the influence of heredity in bringing about glycosuria, but it was of course evident that the existence of this affection in minor degrees had been often overlooked in the past, and that a better estimation of the transmission of the tendency would in the future be more possible under the steady maintenance of careful examination of the urine. As to the way in which the transmission was ordered, in one case it seemed to go with the gouty diathesis from the father's side; in others it was observed who were the subjects of nervous instability; in others, again, these conditions were absent, and tissue imperfections had to be invoked, the occurrence of glycosuria in very stout people being a noteworthy fact. He was inclined to regard both the accumulation of fat and the occurrence of glycosuria as marks of imperfect forms of nutrition. In many cases, in conjunction with obesity, the influence of persistent alcoholic excitement of the liver could not be overlooked, the irritation producing a reflex active hyperæmia and consequently glycosuria. For those victims of alcoholism who presented glycosuria, and who were emaciated, a different explanation must be sought. A considerable proportion of these cases had valvular disease of the heart, and irregularities of arterial tension might here have to be considered. It was not unfrequent to find people suffering with symptoms of contracting granular kidney to be also affected with glycosuria. Whether it was here due to a general defect of assimilative or constructive process or related with a very definite arterial tension was not easily to be decided. Again, he had observed the occurrence of glycosuria in two cases of Raynaud's disease, and in a third with disease of kidneys, sloughing ulcers, and syphilis. From cases he had since seen he concluded that glycosuria was often present in tertiary syphilis, and under conditions not involving irritation of the medulla. In these cases signs of hepatic disorder were always present, and he thought that hepatic irritation was mainly chargeable with the production of the glycosuria. But he dared not speak with any tone of decision on this point when he remembered the possibility that faulty tissue-building at large might have to be considered. Muscular and other tissues, as well as the liver, were the seats of formation of glycogen, and it appeared to him quite possible that a disturbance of nutrition in muscles, in spinal cord, and in liver might exist independently in each and give rise to glycosuria; while, on the other hand, a deep dystrophy might affect all at once. Several cases of angina pectoris in association with glycosuria had come under his knowledge, and he related one at length in which this conjunction existed. He thought it must be admitted that angina was no more an essential disease than glycosuria, and he recognized in it varieties of form and causation which ran in curiously parallel lines with those of glycosuria. Every one recognized the typical form of angina wherein degeneration of the heart-muscle played one part and arterial stress another; and every one would also further admit that disorder of innervation played an important part in disturbing the balance between the heart and the arteries. Glycosuria also might be a mark of disordered innervation, but in a preponderance of cases presenting glycosuria together with symptoms of angina the evidence of primary neurotic disturbance had not been strong. The subject of the occurrence of sugar in the urine of women in whom lactation had been suppressed was then discussed. The chemical reactions obtained in several cases appeared to correspond exactly with those which would be yielded by glucose, but their rapid evanescence had so far stood in the way of the obtaining any sufficient quantity of urine to afford opportunity of a complete investigation. The indication was apparently that the stoppage of the secretion of milk had determined a backward flow into the vessels of lactose in a quantity so large as to be represented by the appearance of a considerable quantity of glucose in the urine. M. Germain Sée had shown that, while milk taken in large doses produced diuresis and a very marked glycosuria, large doses of lactose caused a remarkable polyuria, but no glycosuria; why this should be was not clear. Not many years ago, when albumen was found in a patient's urine, he was supposed to have Bright's disease; and so now, it was very often the practice to speak of the existence of a small quantity of sugar in the urines as

justifying the use of the term diabetes. He thought that those who had studied the question most thoroughly would agree that this was a most unwise use of the term; unwise as bearing alike upon prognosis and treatment. If his views of the analysis of the causes of glycosuria were at all to be admitted, it followed that the treatment of a glycosuria which was subordinate must be involved in the treatment of the major part of the case. What he had put forward was rather analytical and suggestive than final or didactic, and he submitted for criticism, and proposed for investigation, certain associations of glycosuria which had presented themselves to him, and to which he had devoted a good deal of thought.

Dr. Pavy had found glycosuria frequently associated with obesity and with spareness, but he could not conclude that there was any absolute connection between them; in stout people, however, the disease seemed to be more amenable to management. He recognized a connection between glycosuria and enlargement of the liver; in many of the latter the disease was not of the ordinary form, for they possessed a certain amount of power to assimilate carbohydrates. A contracted granular kidney seemed to exert a restraining influence over the diabetic condition, and in cases where chronic interstitial nephritis developed in the course of a case of diabetes the same restrictions of diet were not necessary in order to keep the sugar under. He had observed that glycosuria was often accompanied by peripheral neuritis, especially after middle life; and in the gangrene of the toes, often associated with diabetic cases, there was an amount of pain out of proportion to the gangrenous condition; and, if glycosuria were really connected with nerve-disease, it was not strange to find angina pectoris or exophthalmic goitre associated with it. He agreed with Dr. Ord that it was unwise to confine our attention too exclusively to the liver. It was merely a matter of limitation of the assimilative capacity, for even in healthy people that capacity was not unlimited. In some diseases of the liver very little of the secreting structure was left, and yet these patients did not get diabetes, and that was one reason why a broader view should be taken as to the causation of this affection.

Dr. Ralfe also thought we should look beyond malassimilation by the liver. There were two great groups of cases presenting sugar in the urine,—1, acute cases coming on with a threatening aspect, in which there was a great drainage of water and sugar from the system and early and rapid emaciation; 2, a class of cases coming on more insidiously, associated with gout, syphilis, heredity or kidney mischief. It was of much slower duration, the patient was often stout, and the disease drifted on for years and years, and then was not, perhaps, of itself fatal. Dr. Purdy had shown him some tracings taken from cases of diabetes; there was marked tension of the vessels, like that seen in renal disease, but there was no albumen and no casts, nor was there reason to suspect gout. A Carlsbad physician had asserted that in all cases of diabetes the left ventricle of the heart was hypertrophied, and the vessel walls were thickened; the arterial tension later gave way to degeneration. It had been pointed out that in cases where suppression of lactation had occurred, crystals of lactose were found in the urine; it did not become converted into glucose.

Dr. Savage spoke as to the relations of diabetes with insanity. They were both directly hereditary, and it was common in insane people to get a history of diabetes in the parents; it was nevertheless uncommon to meet with sugar in the actively insane; those cases in which he had found sugar were puerperal. In many patients insanity had been observed to alternate with glycosuria; when they recovered from an attack of insanity the sugar had reappeared in the urine.

Dr. S. West said that Dr. Pavy had used increased arterial tension to explain the favorable course diabetes ran when granular kidney developed, but in exophthalmic goitre the tension was far from increased. He asked if diabetes could be produced by errors of diet. He quoted the case of a girl who, as assistant in a grocer's shop, ate a very large quantity of sugar, and died of acute diabetes.

Dr. Pavy disclaimed any intention of asserting that increased arterial tension caused diabetes; he thought rather it was due to a vaso-motor paralysis, a dilatation of vessels.

Sir William Roberts remarked on the extraordinary way diabetes complicated all sorts of morbid conditions. He thought that Dr. Pavy had touched nearer to the solution of the problem of diabetes than any physiologist now living. It was a disease most puzzling to study, and it had almost as many paradoxes as gout itself.

Dr. Mitchell Bruce referred to two classes of cases which had glycosuria in combination with gangrene,—1, stout middle-

aged people whose toes became gangrenous, and on whom opium exerted a remarkable influence; and, 2, patients with typical Raynaud's disease. He had seen a patient suffering from the latter affection in whom the disease was arrested by morphine, and he wondered whether in the liver in diabetes there might not be a condition of peripheral neuritis, for it certainly was not necessary that the disease of the nervous system should be central.

Dr. Maguire said that though gout might be the connecting link between some cases of granular kidney and glycosuria, yet there was a connection between diabetes and a certain degree of granular kidney in which no gouty element was present. When albuminuria occurred in diabetes it indicated a hardening of the kidney, and did not suggest a bad prognosis; on the contrary, it was extremely likely that the condition of the diabetic patient would improve. The kidney in these cases was not a typically contracted organ; it was dark red, the capsule was slightly adherent, the surface faintly granular, and the whole organ tougher.

Dr. Williams asked what proportion of cases showed the presence of carbuncle, and also in what number of cases phthisis was observed.

Dr. Ord, in reply, said he had not met at all frequently with either carbuncle or phthisis in glycosuria, but they were common in true diabetes. As to the connection with obesity, he had seen a good many cases in which glycosuria and obesity existed alone, but in thin patients there was always some other causative condition present. In one of his cases the patient had marked signs of granular kidney with hard arteries and plenty of casts; the sugar was very small in quantity, and could not have produced the disease of the kidney. He did not know whether diabetes could be produced by errors of diet.

THE PHYSIOLOGICAL ACTION OF THALLIN.

This remedy, which at one time enjoyed considerable popularity, has fallen almost entirely into disuse. Some studies, however, have been recently undertaken by M. Albert Robin, who read them before the meeting of the Academy of Medicine at its session upon October 15, 1889, which are worthy of attention (*La Tribune Médicale*, October 17, 1889).

Robin's studies were especially directed towards determining the effect which this substance has upon tissue waste, and he concludes that thallin diminishes tissue waste especially of albuminous substances, and hence retards the elimination of uric acid, at the same time diminishing its production; while it increases the dissimilation of organic substances which contain sulphur and phosphorous. From these considerations Robin concludes that thallin is a poison to all organs which contain sulphur and phosphorous. It is, therefore, a poison for the nervous system, and should be rejected from therapeutics.

THE COMPARATIVE VALUE OF ANTIPYRIN, ANTIFEBRIN, AND PHENACETIN AS ANTIPYRETICS.

In the *Practitioner* for October, 1889, Surgeon-Major A. Crombie publishes notes of seven cases of intermittent fever, enteric fever, simple continued fever, and acute tuberculous pneumonia treated in the general hospital in Calcutta. As regards efficacy, Dr. Crombie believes that his observations indicate that antipyrin stands first, and that there is little to choose between antipyrin and phenacetin. As regards safety, however, he believes that the advantage lies with phenacetin, since he has never seen subnormal temperature result from the use of that drug, as is often the case with antipyrin and antifebrin, and that collapse never follows its employment, although he has seen this follow after the use of antipyrin. As regards rapidity of action, antipyrin, in his experience, probably on account of its solubility, comes first, antifebrin second, and phenacetin third. In the use of phenacetin the fall of temperature is very gradual, and the minimum is not reached for three or even five hours after the administration of the drug. The duration of antipyretic effect is more marked after the use of phenacetin than either of the others, while as regards certainty of action the same sequence is obtained as regards rapidity,—that is, antipyrin, antifebrin, phenacetin. As regards the unpleasant feature attending the use of these drugs in the climate of India, Dr. Crombie has found that phenacetin is followed by just as profound sweating as either antifebrin or antipyrin, and that this is the great drawback to the use of antipyretics.

Of course it is to be expected that the use of these drugs does not in any way shorten an attack of fever, and Dr. Crombie has found that in remittent fever they have no

abortive effect. The conditions in which antipyretics are indicated are, therefore, reduced to cases of hyperpyrexia, when the life of the patient is threatened by the height of the fever itself; then the temperature must be reduced at all costs, and in most cases the most rapid antipyretic is the best. In such cases Dr. Crombie recommends antipyrin; but when the temperature is not so high as to immediately of itself endanger life, it may nevertheless at 103° or upward lead to structural changes, especially in the muscular tissue of the heart, which constitute the great danger of long-continued pyrexia.

Here a reduction of temperature becomes imperative, and the question is now as to how it may be done most safely. In many cases this is best accomplished by means of the cold pack; but there are so many practical difficulties in carrying out such a practice that we are reduced to a choice of antipyretics: this now lies between phenacetin and antifebrin, though Dr. Crombie's opinion is that phenacetin will best answer the purpose. Especially as it possesses a certain amount of soporific power, so much so that in cases of slight feverishness, accompanied by insomnia and great restlessness, small doses of 3 or 4 grains of phenacetin—not sufficient even in India to produce perceptible diaphoresis—will insure a quiet, peaceful night, with no headache in the morning.

To conclude, then, Dr. Crombie maintains that in heat-apoplexy, sunstroke, and hyperpyrexia generally, antipyrin is indicated. In temperatures of 103° to 105°, antifebrin or phenacetin; in temperatures below 103° the preference should be given to phenacetin.

THE TREATMENT OF HEPATIC JAUNDICE BY HYPODERMIC INJECTIONS OF PILOCARPINE.

WITKOWSKI considers pilocarpine as almost a specific in the treatment of jaundice. Two years ago, he writes (*Bulletin Général de Thérapeutique*, October 12, 1889) that he had under his care a patient affected with nephritis, complicated with biliary calculi, enlargement of the liver, jaundice, ascites, and dropsy of the legs. This patient was 45 years of age, and seven years previously, during the progress of a pregnancy, she commenced to suffer from pains in the right side, which greatly increased after delivery, and were accompanied by the development of jaundice. Treatment by Carlsbad waters produced somewhat of an improvement, but the jaundice as well as the hepatic colic returned regularly at each menstrual period. This condition continued to increase in severity for a period of four years, and when she first came under the care of the author her condition was extremely serious. Two injections of pilocarpine (half a syringeful of a two per cent. solution) produced notable relief. Hepatic colic disappeared completely, even although morphine had previously proved inefficacious and the liver became less painful to pressure. Under the influence of injections of 1/6 of a grain of pilocarpine, administered once or twice daily for three weeks, the jaundice, as well as the hepatic pain and the enlargement of the liver completely disappeared. For three years the patient remained perfectly well, and the author states that he has treated thirty analogous cases in a similar manner, in every instance with the most satisfactory results. He notes, however, that the treatment was inefficacious in cases of jaundice resulting from tumors of the liver, and he makes the statement that when in doubtful cases if pilocarpine, employed from ten to sixteen days, does not cause the disappearance of jaundice, the conclusion may be positively formed that the case is one of a malignant nature. He, therefore, recommends the use of pilocarpine in all cases of jaundice, provided the condition of the heart will permit.

SYZYGIUM JAMBOLANUM IN ARTIFICIAL DIABETES.

In the *Lancet* for November 2, 1889, DR. C. GRAESER publishes an account of some experiments which he has recently made under the direction of Professor Binz in the Pharmacological Institute at Bonn. The experiments were with the extracts of the fruit of *Syzygium jambolanum* upon dogs rendered diabetic by phloridzin. This plant is a tree of the group of Eugenioideæ, subfamily Myrteæ, indigenous in tropical America, the West and East Indies, where its acid fruit is eaten. In Java the natives use the fruit for diarrhœa and diabetes, and since its introduction into Europe as jambul it has also been employed here in diabetes. In order to test its action, and to see whether and to what extent it was capable of influencing artificial diabetes, Dr. Graeser made some dogs diabetic by phloridzin, following the instructions of Von Mehring. By administering 38 to 74 grains daily of phlo-

ridzin to young dogs, in the proportion of 15 grains to every two pounds of weight, there ensues an excretion of sugar, lasting from twenty-four to thirty-six hours, amounting to 90 and 188 grains. At first Dr. Graeser gave the phloridzin in one dose, later in 15-grain doses every two or three hours, but without any notable difference in the amount of sugar excreted. In three experiments some diarrhœa was set up. In each case, whenever either before, with, or after the phloridzin, the animal was given extract of *Syzygium jambolanum*, the sugar excretion invariably fell, in some cases to about nine-tenths of the amount excreted under phloridzin alone, in all it was diminished to at least one-half. At the same time the period of excretion was curtailed. Thus, while with phloridzin alone the amount of sugar was from 5.89 to 12.45 grammes, the amount (with the same dose of phloridzin) under treatment by jambul was maximum 2.906, minimum 1.5 grammes. With a drug of which the action begins and ceases within a limited time, its antidote must also act in a definite time and in corresponding quantity, to be determined by experiment. So that if such a diminution in the excretion of sugar takes place, as related in these experiments,—viz., nine-tenths,—by the use of jambul, its more accurate employment might perhaps completely check this excretion. The conditions in diabetes mellitus are far better suited to test this, besides showing the agreement between phloridzin diabetes and the natural disease. This research is of special value, as showing that the *Syzygium jambolanum* may be used in diabetes mellitus in the human subject much more freely and in larger doses than hitherto, for in no direction were any effects observed which would contraindicate its use. There was no sign of any toxic action even in the dog which had a daily dose of jambul extract. In one experiment there occurred some diarrhœa, but this happened in later experiments with phloridzin alone, and was probably attributable to the latter. The extracts were partly made from the whole fruit, partly from the rind or kernel, and concentrated so that 100 grammes of fruit were represented by 16⅔ grammes of the kernel and 11⅔ grammes of the rind extract. The dose was 6 to 18 grammes daily. It is still uncertain whether the active principle is in the rind or the kernel; probably in both, but more in the former.

The results of three sets of observations may be thus summarized:

	Grammes.	Grammes.	Grammes.
Sugar excreted with phloridzin	12.5	10	10.5
Sugar excreted with phloridzin and jambul	2.1	1	1.5
Percentage reduction in sugar	80.8	84	85.7

THE AMOUNT OF FAT IN CONDENSED MILK.

Attention has recently been called to the fact that examination of certain specimens of condensed milk prove that skimmed milk has been used, and the results of these analyses by the Health Department of the city of Brooklyn have been published in the annual report for the year 1888, which has just been issued. The method of analysis which was employed was based on the statement of Dr. Koenig that for every 100 parts of albuminous substance in cow's milk there is from 100 to 110 parts of fat, and that this relation must remain in condensed milk; or, in other words, the amount of fat must equal or exceed the amount of albuminous substance. It will be remembered that the albuminous substances of milk, or albuminoids, as they are frequently termed, are substances containing uniformly about 15.8 per cent. of nitrogen, and that they are of sufficiently stable character to withstand the process of evaporation without loss.

As by the evaporation of milk there is no loss of fat or albuminous substance, and as by the addition of pure sugar neither fat nor albuminous or other nitrogenous substance is added, the ratio of fat to the albuminoids must be the same in condensed milk as in the milk from which it is made, and on these facts is based the method which Koenig gives.

The conclusion seems, therefore, warranted, since numerous independent analyses have, in a general way, confirmed this statement, that if condensed milk, or milk condensed and preserved with pure sugar, is found to contain less fat than albuminoids, it may be concluded that it is skimmed, or made from milk deprived of cream to an extent at least proportional to the amount of albuminoids. The analysis of twenty-three samples of condensed milk, of various manufacturers, showed that samples from No. 3 to No. 19, inclusive, were made from milk the cream of which had been more or less removed.

The following table shows the result of the analyses:

Tabular Statement of Analyses.

No. of sample.	Brand, etc.	Price.	Per cent. fat.	Per cent. albuminoids.	Per cent. water.	Per cent. ash.
1	Bottled Market Milk—Dairy A	8 cents quart.	4.07	3.37	87.08	.69
2	Bottled Market Milk—Dairy B	8 cents quart.	3.81	3.24	87.43	.68
3	Anglo-Swiss Condensed Milk	1-pound can, 14 cents.	5.88	7.03	23.07	.....
4	Anglo-Swiss Condensed Milk	1-pound can, 14 cents.	6.06	8.41	26.37	1.88
5	Rose Brand	1-pound can, 10 cents.	7.16	8.32	26.63	1.80
6	Rose Brand	1-pound can, 10 cents.	6.91	8.34	....	.....
7	Rigi Brand, Franco-Swiss Company	1-pound can, 13 cents.	0.22	.....	25.08	.....
8	Rigi Brand, Franco-Swiss Company	1-pound can, 13 cents.	0.70	8.88	30.90	2.27
9	Eagle Brand, N. Y. Condensed Milk Company	1-pound can, 17 cents.	6.04	8.21	23.69	1.67
10	Eagle Brand, N. Y. Condensed Milk Company	1-pound can, 17 cents.	5.48	7.83	.....	.....
11	Crown Brand	1-pound can, 15 cents.	6.81	7.89	30.00	1.89
12	Crown Brand	1-pound can, 15 cents.	7.28	7.86	.....	.....
13	Daisy Brand	1-pound can, 12 cents.	6.13	8.42	26.66	1.59
14	Champion Brand	1-pound can, 10 cents.	6.10	8.41	24.58	1.88
15	Champion Brand	1-pound can, 10 cents.	5.18	8.33	.....	.....
16	Dime Brand	12-ounce can, 10 cents.	4.73	8.53	25.13	1.86
17	Dime Brand	12-ounce can, 10 cents.	5.78	8.54	.....	.....
18	Osprey Brand, S. W. Canfield	1-pound can, 13 cents.	6.51	9.02	26.57	1.91
19	Osprey Brand, S. W. Canfield	1-pound can, 13 cents.	4.93	9.04	.....	.....
20	Nestlé's Condensed Swiss Milk	1-pound can, 16 cents.	9.44	9.18	24.84	2.00
21	Darling Brand, Michigan Condensed Milk Company	1-pound can, 10 cents.	8.77	8.79	24.84	1.81
22	Borden's Condensed Milk, from wagon	.....	10.93	10.16	59.81	2.14
23	S. W. Canfield's Condensed Milk, from wagon	.....	13.17	10.50	59.43	2.19

THE THERAPEUTIC VALUE OF SENNA-PODS.

The paper of Dr. Macfarlane's as to the therapeutic action of senna-pods, which was alluded to in a previous number of the GAZETTE, has called forth an article upon the properties of senna-pods, by E. F. SALMON, who has published it in the *Pharmaceutical Journal and Transactions*, October 12, 1889. Mr. Salmon has found that the senna-pods are richer in cathartin, the active principle of senna, and which is a combination of cathartic and phosphoric acids with a magnesium and calcium base; while, in addition to cathartin, there is found in the leaves a volatile oil, which is absent in the pods. It is, therefore, on this account that the pods are free from nauseous taste, and are less likely than the leaves to cause griping pains. Treatment with alcohol removes the resinous and odorous principles to which the griping and nauseous taste are due, and will leave the cathartin unchanged. Cold water, on the other hand, readily dissolves the cathartin from the pod, while the cathartin from the leaf, owing to the impervious nature of its epidermis, is insoluble in cold water. Accordingly Mr. Salmon recommends cold water as the best menstruum for the preparation of a fluid extract. The first maceration should be for twenty-four hours; for the second, twelve is sufficient. For one pound of pods six pints of cold distilled water for the first and about three pints for the second maceration is a sufficient quantity to use. The liquors when strained off to be evaporated to thirteen fluidounces, and the usual four ounces (twenty-five per cent.) of spirit added, and, after standing for a few hours, to be filtered, and, if necessary, made up to sixteen fluidounces with distilled water. An almost black liquid will result, which is perfectly tasteless, and, in doses of from ½ to 2 fluidrachms, will almost invariably produce purgation.

THE TREATMENT OF ENDOMETRITIS.

DR. BOCK, assistant physician to the Hôpital St. Pierre, in Brussels, gives in *La Clinique* some notes of a series of cases of endometritis in which very satisfactory results were obtained by the use of Canquoin's paste applied to the interior of the uterus. Dr. Bock does not give the strength of the preparation, and this is not always the same in various continental formularies. The paste is made by mixing 1 part of chloride of zinc with 2 parts, or, according to some formularies, with 1 part of flour, and enough water to enable the mass to be kneaded into the required form. For the uterus, of course, the form required was that of a stick of such a length as to reach from the fundus to the external os. A careful measurement had,

necessarily, to be previously taken with the sound, and the cavity washed out with a sublimate solution. The stick of Canquoin's paste was then introduced, and retained by means of a plug of cotton-wool. For three or four hours the patients sometimes suffered a certain amount of pain, but this was by no means unbearable, and frequently there was no pain at all. Vomiting was occasionally produced in very sensitive subjects, but in none of the fourteen cases in which this treatment was adopted was there any pyrexia or other complication. The patients were kept in bed for a few days, and warm antiseptic injections given. The caustic produced a slough to the depth of from two to five millimetres, which came away, sometimes revealing a perfect cast of the interior, and even showing the commencement of the Fallopian tubes. Dr. Bock considers that this treatment is suitable—where the cervical canal is sufficiently patent—in all cases of chronic simple endometritis, as well as in fungoid or hemorrhagic cases, and that it is peculiarly beneficial in cases of gonorrhœal origin, and he does not find that chronic or subacute inflammation of the uterine appendages forms any contraindication. His results agree with those of MM. Polaillon and Dumontpallier, who first recommended this treatment, and who were successful in thirty-eight out of forty cases in which they employed it.—*Lancet*, October 12, 1889.

THE ELIMINATION BY THE STOMACH OF MORPHINE INJECTED SUBCUTANEOUSLY.

In a paper published by Dr. Alt in the *Berliner Klin. Wochenschrift*, No. 40, 1889, is found an explanation of the cause of the nausea and vomiting which in so many cases follow the subcutaneous administration of morphine, and a practical point is indicated for the relief of this complication in grave cases. The author has found that when morphine is injected subcutaneously it is eliminated through the mucous membrane of the stomach, and that this elimination commences two minutes after the injection, continues for about half an hour, and ceases at the end of fifty or sixty minutes. The nauseating effect of subcutaneous injections of morphine are attributable to this gastric elimination of the alkaloid, and the emetic effect coexists with the elimination of the morphine by the stomach, or, at least, never precedes it. Dr. Alt finds that washing out the stomach entirely prevents the production of nausea, a point which may be of value when rebellious vomiting follows the administration of this hypnotic. The quantity of morphine which is eliminated by the gastric mucous membrane is relatively large, and may amount to even half of the total amount injected beneath the skin. The author further finds that when washing out the stomach is performed after each injection of morphine, there is produced great attenuation in the toxic effects of this alkaloid, and that then doses, which, under other circumstances, would be inevitably fatal, are found to be administered without danger. It should be mentioned that, although the author's conclusions are deduced from experimental results obtained upon dogs, similar experiments made upon man sufficed to affirm the reliability of these conclusions.

THE CURE OF HEMORRHOIDS BY EXCISION AND CLOSURE WITH THE BURIED ANIMAL SUTURE.

At the recent meeting of the New York State Medical Association Dr. H. O. Marcy, of Boston, in his paper on this subject, said that the recent discussion of the surgical treatment of hemorrhoids, published in the *New York Medical Journal* (October 26, 1889), evoked by a late paper of Mr. Whitehead's, of Manchester, England, had been both timely and interesting. The medication of wounds, and treatment based upon aseptic measures, marked the present as an era of surgical evolution, to which surgery of the rectum should be no exception. Few of the minor surgical diseases caused so much suffering and gave to the general practitioner such constant repetition of complaints as those of the rectum, and, in return for services rendered, no class of patients were more appreciative and grateful. The teaching of the text-books, with few exceptions, offered very little improvement upon the methods of the past in the treatment of the diseases of the rectum. The advocates of the ligature perhaps equalled those who claimed superior advantages to be derived from the use of the clamp and the cautery. Although a practical cure was often obtained from the use of either, he could not but believe that both were surgically defective and should be relegated to history. While it might be conceded that the general practi-

tioner was in a large majority of cases familiar with the pathological conditions pertaining to the hemorrhoidal diseases, still it might be well to be reminded that the blood was carried with the arterial impulse directly to the part through short, branching vessels, and in turn received from the capillaries into an extraordinary net-work of veins, which emptied through the inferior mesenteric into the portal system. These veins were entirely without valves. Boerhaave and Morgagni had pointed out these anatomical peculiarities, and remarked upon the horizontal position in the weight of the blood-column. They adduced this as a reason why quadrupeds were not subject to diseases of this nature. He took pleasure in calling attention to a most interesting and learned article on this subject by Dr. Bodenhamer (*New York Medical Journal*, January 12, 1889, p. 39). It seemed, however, a just criticism that the weight of the venous column alone acted only in a very subordinate degree as a predisposing cause, although manifestly an important factor after the blood-current becomes gradually retarded in the oftentimes enormously dilated hemorrhoidal veins.

Were the cause to be found in this peculiar distribution of the portal circulation, the upright position of man would make this condition the rule instead of the exception, and it would be extraordinary to find the varicosities limited to the hemorrhoidal plexuses and lying almost entirely external to the sphincter muscle. Oftentimes, however, after the pathological conditions became well established, the current through the ectasic vessels was so greatly retarded by the weight of the blood-column in the erect position that most patients learned to seek relief by change of posture. Anatomists emphasized the fact that in the normal condition many of the hemorrhoidal veins were of comparatively large size. In relation to the surrounding pelvic organs these veins occupied a dependent position, and their only support was derived from a loose net-work of connective tissue. It would be apparent, then, that the anatomy of these thin-walled vessels, their relation to the surrounding parts, and their physiological function, furnished, as it were, a predisposing cause of disease. To this, however, probably might be added a certain condition of weak circulation so often found in persons with thin-walled veins of the lower extremities. It had long been recognized that the varicosities of the hemorrhoidal vessels, which were probably wanting in the lower animals and were comparatively rare in the savage races, became a more and more constant factor in the sedentary occupations of modern civilization. A great variety of pelvic diseases in the female and the genito-urinary diseases in the male, complicated with constriction, were active causes of rectal disease. The rectum might be regarded as a convenient cess-pool for the reception of the waste and *débris* of the alimentary canal, which poured into it in a more or less fluid state. The curves of the lower bowel, from the sigmoid flexure downward, were an evident design, in part at least, to vary the support of the weight of the column and admirably adapted to equalize the pressure. When the rectal contents remained sufficiently soft to produce equable pressure, the circulation was comparatively little disturbed, and defecation was accomplished with very little muscular strain. If, however, there should be retention of the contents, with absorption of the fluid portion going on until the moulding process became difficult, the reverse would be true. The overloaded rectum produced pressure upon the venous return current, causing a train of reflex nervous symptoms, and the hyperæsthetic state followed. Although the pathological condition above described produced by far the larger part of the suffering ascribed to so-called "piles," we must not forget that there were other diseased conditions which might be confounded therewith. Small fleshy masses about the folds of the anus, sometimes called condylomata, were very easy to distinguish. These had nothing to do with the hemorrhoidal veins or mucous membrane, and might be the result of friction or erosion arising from a variety of causes. The so-called villous tumor of the rectum was, however, of sufficient frequency to be taken into consideration. It was not unlike the villous growths of the bladder or other mucous surfaces. This extra vascularity only revealed its presence because of the hemorrhage, and was apt to be diagnosticated as a bleeding pile. The soft mucous polypus of the rectum was an adenomatous structure of close relationship to the villous growth, and was sufficiently often the cause of suffering to be borne in mind.

Mr. Whitehead, of Manchester, had emphasized the pathological conditions upon which the author had touched, and insisted that the extraordinary dilatation which the veins often underwent could only be learned by dissection upon the living subject. The author's own attention had been called to the

condition many years ago, when he found how very commonly the veins of the rectum became enormously dilated in a female who had suffered laceration of the perineum. It was probable that the changes incident upon retention of the rectal contents and other causes acted to bring about dilatation of the vessels rather than the superincumbent weight of the portal column of blood. When the venous plexus of hemorrhoidal vessels had become pronouncedly varicosed, they had as a covering the lax submucous tissue of the rectum close to the anus, and when put on tension were protruded as a ring of transverse rugæ around the anal aperture. Certain of the rugæ were developed into rounded protuberances, and sometimes even into fungoid tumors of considerable size. The veins sometimes ruptured into the connective tissue and changes followed which resulted in tumors of various sizes, color, and density, called "external piles." The strain in defecation or gentle pressure by the finger from above downward would frequently cause soft, fleshy, exquisitely sensitive grape-like masses to protrude,—"internal piles." The mucous membrane covering these would frequently be found congested and abraded so that more or less continuous hemorrhage ensued.

The method for the cure of hemorrhoids by the use of the ligature applied with slight modifications of detail had been considered the safest, surest, and most manageable procedure. The projecting tumors, having been well drawn down, were usually transfixed with a curved needle, armed with a double ligature; this being tied firmly, a portion of the constricted mass was excised. In this way all the hemorrhoidal tumors were ligated, and the mass was then returned within the sphincter. This was the favorite operation of the late Dr. Van Buren and his followers, and had at present in Mr. Allingham, the famous English surgeon, its most distinguished advocate. The use of the ligature, applied to cause necrosis of tissue, and then allowed to remain in the wound, was open to the same general objections which had caused its abandonment. When applied in this manner to the constriction of the large vessels, sloughing necessarily supervened, which meant an infected wound, exposing the patient to the same dangers, although, perhaps, of less degree, as infection in any other part of the body.

That this was not hypothetical criticism the writer thought there was abundant proof. The stoutest advocates of the ligature admitted that abscesses, general septic poisoning, and other dangers, as secondary hemorrhage, were not wanting in the experience of the most careful and practical surgeons. The use of the clamp and cautery came into vogue and had been specially popularized by the distinguished surgeon, Mr. H. Smith, of London. This procedure the author had early adopted in his own work. It had advantages over the ligature in that the primary wound was aseptic. Then, by the time the slough was ready for separation, the subjacent tissues would be fairly well protected by the abundant proliferation of granulation tissue. In his own experience, the suffering caused by the burning was objectionable, while all wounds caused by burning were invariably slow of repair. He was of the opinion that the results obtained from the use of the cautery were generally of a more satisfactory character than from the ligature. Secondary hemorrhages were reported to have occurred, and it was claimed that contraction was not uncommon after cauterization. It might be accepted as a fact that the use of the cautery, except in certain conditions in uterine cancer, had been relegated to the past. Even here it found fewer advocates than formerly. Certainly bleeding was to be controlled without its use, and it might be questioned whether deep burning was safer than deep cutting in any disease. Then various crushing instruments had been devised, to be used, however, with or without the ligature, for the purpose of producing more rapid necrosis of the tissue involved. The advantage alleged for the operation of crushing was an avoidance of hemorrhage; but, on the other hand, some operators reported that hemorrhage had followed crushing. Theoretically this method seemed to offer little, if any, advantage over the ligature, therefore he had discarded it without trial. There remained something to be said of the cure of hemorrhoids by the chemical action of certain medicaments injected into the parts. Few of the modern methods had received more speedy attention than this, the so-called "carbolic-acid treatment of piles." It had much to warrant its acceptance. Carbolic acid of itself was at that time believed to be the chief of antiseptics, rapidly coagulating the blood and the albuminoids. It had been variously combined with morphine, cocaine, etc., and little pain had followed its use, and patients and physicians had been alike enthusiastic. At present, however, it appeared that the consensus of surgical opinion was that the re-

sult was in a large degree disappointing. When a considerable proportion of acid was used, causing necrosis of tissue, no matter how carefully injected, the tissues not infrequently which it was desirable to remove failed to be acted on, while those which should have been retained were destroyed by sloughing. The explanation was that the fluid introduced into the loose margin of the connective tissue escaped to the extraneous parts. When weaker proportions were used, even after many repetitions of the injections, the hemorrhoidal vessels remained comparatively unchanged. The method of cure by injection was also sometimes objectionable and even dangerous. The writer had seen a young and healthy man made seriously ill, with considerable fever and general septic poisoning supervening upon the injection of hemorrhoids at the hands of one of our most capable men. The connective tissue around the anus remained for some days œdematous, reddened, and painful. There now remained for discussion the operation of Mr. Whitehead, of cure by excision. This the author of the paper did not hesitate to accept as a step in advance of all surgical procedures previously discussed. It had been demonstrated that the vessels were frequently so deformed as to fail entirely in the original purpose for which they were designed, and the end sought to be obtained by all previous methods had been their destruction and removal. The real objection to destruction had been the fear of hemorrhage, and, as a means to obviate this, the ligature and clamp and the cautery were devised. Mr. Whitehead had clearly shown that his method of dissection was safe, that the hemorrhage was not excessive, and that a rapid cure resulted. The method was certainly scientific. By a clean dissection the parts which it was desirable to eliminate were removed. The free edges of the divided tissues were then stitched together, primary union generally resulting. Mr. Whitehead's method was best given in his own words:

"By the use of scissors and dissecting forceps the mucous membrane is divided at its junction with the skin around the entire circumference of the bowel, every irregularity of the skin being carefully followed. The vessels are then exposed by a rapid dissection of the mucous membrane, and the attached hemorrhoids, thus separated from the submucous bed on which they rest, are pulled bodily down. Each individual point is brought below the margin of the skin. The mucous membrane below the hemorrhoids is now divided transversely in successive stages, and the free margin and the severed margin above are stitched, as soon as divided, to the free margin of the skin below by a suitable number of sutures. The complete ring of pile-bearing mucous membrane is thus removed."

Mr. Whitehead very wisely emphasized thoroughly paralyzing the sphincter by digital stretching. The bleeding vessels, which were small and easily seized, were immediately twisted upon division. The sutures were interrupted and of braided silk. Mr. Whitehead's operation had been, of course, variously criticised, but, as that gentleman could refer to a record of some three hundred cases in which the operation had been, "to the best of his knowledge and belief," a perfect and permanent cure, there was enough upon which to base a conclusion. Some ten years ago Dr. Marcy said he had operated in two cases of prolapse of the rectum by first, before resection, entirely encircling the prolapsed part upon a row of continuous double sutures. From the excellent result following these operations he had been led to apply the same method to the base of a ring of hemorrhoidal vessels before resection. For some years this method of suturing had entirely superseded all others in his practice, and had been repeatedly demonstrated to members of the profession. He now offered his method for consideration on account of its great safety and excellent result, as presenting advantages in the treatment of a troublesome affection. Care should be taken previous to the operation to have the large intestines thoroughly emptied, usually by an active cathartic, supplemented by a copious injection given a few hours before the operation. The patient was to be placed in the lithotomy position, the limbs suitably supported, and the parts to be thoroughly cleansed by a sublimate solution as usual. The digital dilatation of the sphincter was carefully made until the muscle was paralyzed. The rectum was then washed with sublimate solution, care being taken that none of it was allowed to remain. A pledget of wool, into which iodoform was to be freely dusted, was passed into the rectum, and the subsequent stages of the operation were carried out under irrigation with sublimate solution. Along the line of the junction of the mucous membrane with the skin, either with a knife or scissors, division was made from a central line, posteriorly, from below upward on both sides to

the median line above. With a little care this division could be made without injury to the plexus of vessels. The loose connective-tissue fascia was usually separated by the finger or a blunt instrument, cutting any connective-tissue bands which might appear. The mucous membrane above the plexus should be then divided transversely in a somewhat similar manner. The deformed hemorrhoidal plexus was then separated from its surroundings except at its base. The needle, with eye at point, threaded with tendon, was carried posteriorly behind the mass, unthreaded, and rethreaded with the opposite end and withdrawn, the stitch resembling that taken by the shoemaker, drawing the waxed end of his thread in opposite directions through the hole made with the awl. In this way the entire base was encircled by a line of deep double continuous sutures. This was the stitch the author had for many years used in the coaptation of deep parts by the buried suture, as, for example, in rupture of the perineum and constricting pedicles of abdominal tumors. In this way it was impossible for any tissue to escape. The stitches were not to be drawn too tight, since they were intended merely to control hemorrhage, and not to produce necrosis of the parts they inclosed. Then with scissors the hemorrhoidal plexus, just above the line of sutures, was to be dissected away; the mucous membrane to be then stitched by continous suture to the line of division, either with an over-and-over stitch, or with a running blind stitch, taken from side to side from within outward. The paper concluded with a description of the usual dressings and after-treatment. If the operation was properly done, it was generally followed by primary union. The patient was remarkably free from pain, and the process went on without trouble. The patient need not keep his bed. The bowels should be moved the third or fourth day. By the method above described the author constricted the blood-vessels before division, insuring a much more accurate readjustment and closure of the parts, while the buried animal sutures manifestly presented advantages over interrupted silk sutures, which latter must be thrown off by suppuration.

The author then exhibited specimens of prepared animal tendons, which he advocated as in every way to be preferred in all cases where deep or buried sutures were indicated. He had given *carte blanche* to a friend in Australia for kangaroo tendon.

THE TREATMENT OF SYPHILIS BY QUININE AND MERCURIAL INJECTIONS.

DENENICKI, according to the *Bulletin Général de Thérapeutique* for October 15, 1889, has treated one hundred and seventy-eight cases of syphilis by this method, reporting eight observations in detail in which quinine seemed to occasion the greatest benefit, while in four this remedy was without influence. The author believes that quinine is capable of rendering great service in cases of syphilis where the patients are either greatly reduced or where the temperature and weight of the patients are subject to great oscillation. In other cases quinine is useless. He gives from 15 to 22 grains a day of quinine, and in syphilitic cases he claims that, if the cases are properly selected, under the influence of this amount the general state and appetite are improved, the weight of the body increases, the temperature decreases. Ulcers clean off and commence to cicatrize: and if stomatitis and ptyalism have been present, they will diminish. If the administration of quinine is interrupted, the previous condition of the patients will be regained. He adds that in cases where quinine is used with mercury, it is necessary to increase the amount of the latter drug given daily. Finally, he states, that the cases in which he found improvement following the administration of quinine were not due to any complication with the malarial element.

ARSENICAL PARALYSIS.

In an Inaugural Dissertation presented to the medical faculty of Breslau, DR. CONRAD ALEXANDER publishes an experimental essay as to the mode of production of paralysis in poisoning by arsenic. He formulates his conclusions as follows:

First.—That the symptoms in cases of arsenical poisoning in man point to the fact that the symptoms are attributable to the action of the poison on the peripheral nerves and muscles, and are due to the production of multiple neuritis.

Second.—It is possible in rabbits in certain instances to produce permanent paralysis with arsenic, which is especially located in the posterior limbs, and which is accompanied by a high degree of atrophy of the muscles.

Third.—In paralyzed animals degenerated and atrophied nerve-fibres are to be found in the small muscular nerve-branches and in the nerves of the subcutaneous connective tissue,

accompanied by swelling of, and hemorrhage into, the perineurium. The spinal cord of animals so paralyzed is perfectly normal.

Fourth.—Paralysis in these animals, therefore, is dependent upon degeneration and atrophy of the peripheral nerves and muscles.

Fifth.—Experimental observations seem to warrant the assumption that arsenical paralysis in man is similarly produced.

Sixth.—The muscular atrophy created in animals poisoned with arsenic is not of neurotic origin, but is entirely independent of the nervous system.

Seventh.—The muscular atrophy in animals poisoned by arsenic, in the case of rabbits, is not a fatty degeneration, but a coagulation necrosis, which is ordinarily accompanied by the formation of calcareous deposits.

Eighth.—Degeneration of nerves and muscles is, in all cases of paralysis occurring in animals poisoned with arsenic, probably due to the production of disturbed action in the capillaries of the nerves and muscles.

EUCALYPTUS IN SCARLET FEVER.

A safe and non-disagreeable antiseptic for use in cases of infectious diseases and offensive cancerous ulcers, and one that will be readily tolerated by the patient is a great desideratum. Carbolic acid, as well as iodoform, are both offensive and poisonous, while either of these properties applies to the great majority of all the antiseptics in common use. Oil of eucalyptus is a strong antiseptic, which may be used freely without danger to the patient, and its use is not attended by any disagreeable odor or other unpleasantness. In the *British Medical Journal* for October 26, 1889, MR. J. BRENDON CURGENVEN writes that he has recently used it in the treatment of scarlet fever with much success, and that he has recently employed it in four cases, each of which occurred in a family where there were other children who had not had the disease, and in which cases the fever disappeared in a few days, and at the end of a week or ten days the patient joined the rest of the family without communicating the disease to any of them; further, there was not any general desquamation, it occurring only in those parts where the rash was thickest. The writer's method was to administer the oil internally in 1- to 4-drop doses every four hours in an emulsion, as it is then more equally diffused through the menstruum and is better borne by the stomach. A much more important part of the treatment, in our opinion, is the recommendation of the author to use with the spray-diffuser the eucalyptus disinfectant around the bed at frequent intervals, sprinkling it on the floor of the room or evaporating it on a hot fire-shovel; and, more important still, that the patient be rubbed all over the body with this oil, not allowing any portion of the skin to escape. This is to be done night and morning for the first few days, and then at night till ten days have gone by, the head and hair being subjected to the same treatment every three days, and at the end of the week a bath of the eucalyptus. The eucalyptus soap may be used every other night in addition to the other modes of employment of the eucalyptus. Mr. Curgenven states that the free use of it was unattended by any ill effects in any of his patients or their attendants, and he believes firmly that it has the power of destroying the septic germs of scarlet fever and other contagious diseases.

THE THERAPEUTIC PROPERTIES OF INFUSIONS OF YELLOW RASPBERRY.

In the north of Russia the infusion of yellow raspberry (*Rufus chamarmorus*) enjoys considerable popular repute as an excellent soporific, an infusion of the flowers and leaves being used for this purpose. DR. FRINKOWSKY was the first to call attention to the diuretic effects of this plant, and PROFESSOR POPOW has spoken in the highest terms of the diuretic effects produced by decoctions and extracts prepared from the flowers of the fresh plant. He has succeeded in extracting an acid, in the form of a colorless powder, which is slightly soluble in water and very soluble in alcohol; this acid with bases forms crystalline salts which are very soluble in water, and is to be regarded as the active principle of that plan. It is stated that this substance acts on the kidneys without influencing the beat of the heart. V. BOUCHOUEFF (*Bulletin Général de Thérapeutique*) has recently conducted, in one of the medical clinics at St. Petersburg, a series of experiments, with the object of determining the clinical value of the yellow raspberry as a diuretic, making use of an infusion prepared with 16 parts of the leaves to 180 parts of boiling water, of this 5 or 6 teaspoonfuls being taken each day. The patients to whom this remedy was given were illustrations of various forms of nephritis, cirrhosis of the liver, cardiac affections, cancer of the stomach, chloro-anæmia with œdema, hysteri-

cal epilepsy with palpitations of the heart, etc. In only one case of all under the author's care did this drug fail to produce a favorable increase in the diuresis. The observations, however, are not complete enough, and not sufficiently well classified, to positively state the status of this remedy. It would seem, however, that the writer has obtained results which are sufficiently important to direct further attention to this plant.

Reviews.

OPHTHALMOLOGY AND OPHTHALMOSCOPY FOR PRACTITIONERS AND STUDENTS OF MEDICINE. By Dr. Hermann Schmidt-Rimpler. Translated from the third German revised edition. Edited by D. B. St. John Roosa, M.D., LL.D. One hundred and eighty-three wood-cuts and three colored plates.
New York: William Wood & Co., 1889.

A work on ophthalmology from the pen of the distinguished Marburg professor, translated by a competent hand from the original, and edited by so able an exponent of the practice of eye surgery as D. B. St. John Roosa, cannot fail to find acceptable place in the libraries of all physicians to whom the acquisition of the best books upon their art has become a necessity. The book is divided into four parts. The first comprises general observations on the examination of the eye, the errors of refraction and accommodation, and amblyopia and amaurosis. Almost the opening sentence of this section calls for comment and commendation: "As in the clinics for internal medicine, great importance is attached to taking the exact present condition, in which the entire body is subjected to inspection in a certain order, so that we may avoid overlooking or neglecting any symptom, so likewise a regular sequence must be carried out in examination of the eye." This timely advice should be firmly impressed upon every student who is about to enter the field of ophthalmology; and it is also, we take it, not without value to those who have already passed the gates and are active workers in the vineyard. A systematic examination of people who come because of failure of eyesight, or visible inflammation of the eye itself, will often lead to information so valuable in the conduction of the case itself from the ophthalmological stand-point, or to a proper classification of the disorder in its relation to general systemic disturbance, that great benefit will accrue to the patient and credit to the surgeon.

After a series of remarks of a general character on the examination and treatment of the eye, the author devotes a chapter to the errors of refraction and accommodation. This is eminently satisfactory. It is not burdened with unnecessary formulæ, because, as the author quaintly puts it, "The widespread antipathy of physicians to mathematics—it is difficult to determine whether this is congenital or acquired"—has caused him to reduce the calculations to such as are essential, without at all too much abridging the matter and producing obscurity. In the discussion of myopia it is stated that a large number of myopes do not really have diseased eyes, and that, apart from the absence of far-sight, even extremely short-sighted eyes may be quite normal in their functions. The editor of the book is not in accord with this statement, and inserts a modifying paragraph, in which he observes that in the large majority of cases myopia is essentially a disease. It is just such paragraphs, dotted through the entire work, that have made the value of Roosa as an editor so prominent a feature. He need not have apologetically trusted that the additions would not mar the symmetry of the original, when, quite the contrary, they cover up the occasional blemishes which have crept into this otherwise valuable work. In the etiology of myopia it is pointed out that this error of refraction is congenital only in the most exceptional cases; and the observations of the late Dr. Ely, who was probably the first to demonstrate that hypermetropia is the usual refractive condition in the eyes of newly born, are brought forward. In this connection we wish that the statistical work of Randall had received place. In discussing the symptoms of ametropia, especially of hypermetropia, the author indicates that certain forms of headaches, neuralgias, and migraines are dependent upon the asthenopia induced by the refractive condition, but is evidently disinclined to attribute to it the production of such constitutional diseases as chorea and epilepsy, and the editor punctuates the reluctance of the author, and warns against the tendency of certain enthusiasts in the treatment of neuroses by fitting glasses. Astigmatism, its correction and treatment, are somewhat briefly discussed, and the statement made that the correcting lenses found after atropinization are often discarded by the patient on the restoration of accommodation. This may be true in some of the higher grades of astigmatism, and has led certain ophthalmologists to order partially cor-

recting cylindrical lenses, a practice that it seems to us is not followed by the best results,—a practice, moreover, which the judicious editor of the work distinctly deprecates.

The chapter on amblyopia and amaurosis, including the discussion of the visual field, light and color sense, together with the special forms of amblyopia and hemianopsia, is satisfactory, sound, and scientific. We regret, however, that in the description of hemianopsia, the important relations of Wernicke's symptom are not more definitely developed, and that the work of Seguin in our own country has not received some notice. We are not a little surprised to observe in the account of the functional disorders of the retina, that Dr. Schmidt-Rimpler uses, and Dr. Roosa permits him to use, the terms "hemeralopia" as synonymous with night-blindness, and "nyctalopia" as synonymous with day-blindness. In point of fact, as we know since the researches of Dr. Greenhill and Professor Tweedy, the true meaning of the words, according to their derivation and classical use, is the exact reverse of this, nyctalopia being derived from the Greek word νυκτάλωψ, signifying literally "night-blind-eye;" hemeralopia is the opposite condition, signifying an inability to see during the day. Owing to the fact that these terms have been so commonly misapplied, it seems wise to adopt the suggestion of the late Dr. Mackenzie, and dispense with them altogether. In the pages devoted to simulated amaurosis, among the many tests which are given for its detection, a reference to the simple and ingenious method devised by Harlan of this city would have been acceptable.

Part II. deals with ophthalmoscopy, ophthalmoscopic appearances in the healthy eye, and the diseases of the optic nerve, retina, choroid, and vitreous body. The theory of the ophthalmoscope, various forms of ophthalmoscopes, and the methods of ophthalmoscopic examination are clearly described, and keratoscopy, although the author thinks that retinoscopy is the more correct term, is sufficiently demonstrated for practical application. A clear and eminently satisfactory account of the normal and abnormal ophthalmoscopic appearances follows.

In the chapter on diseases of the optic nerve, although a section is devoted to hyperæmia of its intraocular end, the author does not fail to show that the diagnosis is by no means an easy one on account of the great variety of color which the end of the optic nerve presents. The inaccuracy of the opinion that the circulation of blood in the optic papilla gives any representation of the cerebral circulation is pointed out, and the editor has added a note showing the uncertain value of judging of the condition of insane patients by pathological changes in the optic nerve. Disorders of the optic nerve are divided into papillitis (choked disk) or disease of the optic papilla proper; neuro-retinitis (neuritis descendens) where the process is not confined to the papilla, but also markedly implicates the retina; true inflammation of the optic nerve; and the various forms of atrophy. Papillitis or choked disk is again divided into two forms, and the various explanations of its occurrence are described with sufficient detail, the author leaning in favor of the so-called lymph space or transportation theory of its production.

The chapter on diseases of the retina is very satisfactory, the various clinical groups being clearly and carefully described. On the other hand, the chapter on diseases of the choroid is not as strong as some other sections of this work. It is perfectly true, as the author says, that the causes of choroiditis remain obscure, but we do not believe that it is wise to dismiss them in a paragraph of not more than six lines. This criticism does not only apply to the book before us, but is one that we have heard over and over again expressed by students when studying some of the best productions from ophthalmic surgeons. Following these pages, after treating of diseases of the vitreous body, there are a number of colored illustrations representing supposed characteristic appearances in disease of the fundus oculi. They are neither better nor worse than such illustrations are as they usually appear in works on ophthalmology.

Part III. treats of glaucoma, ophthalmalacia, diseases of the lens, conjunctiva, cornea, sclera, iris, the ciliary body, sympathetic ophthalmia, and suppurative choroiditis. Glaucoma receives very satisfactory treatment, and the pathological anatomy and theory of the nature of glaucoma, with full reference to both ancient and modern work in this department, are carefully elaborated. The views of the author in regard to the comparative value of sclerotomy and iridectomy in the treatment of this disease are contained in the words: "It cannot be denied that it (sclerotomy) would be preferable to iridectomy, if it possessed the same curative effects." A complete but not unnecessarily lengthy dis-

cussion of cataract, its formation and treatment, follows. The medical treatment of immature, or rather of incipient, cataract should probably receive more attention in works on ophthalmology than it does, if the results of some recent publications upon the subject are to receive credence. We think so much of cataract as a disease removable only by operation, that we neglect, perhaps, the somewhat long period of its slow formation, when possibly its growth may be retarded, and certainly its subjects made more comfortable, by judicious medication.

The ordinary clinical distinction of the various forms of conjunctivitis are sharply drawn, and Dr. Schmidt-Rimpler considers it of great practical importance that a clinical difference between follicular conjunctivitis and trachoma should be emphasized. In describing Fruehjahar's catarrh, the author states that only children and young people suffer. We think this is a mistake, Emmert having recorded instances among adults. In the discussion of ophthalmia neonatorum, the editor has introduced a caution, in spite of the high authority of the author, against the use of the nitrate of silver in the earlier periods of this disease. Diseases of the cornea receive elaborate consideration, the treatment is sound, and the descriptions satisfactory. The same remarks apply to the discussion of the diseases of the sclera and iris, the section closing with a chapter on sympathetic ophthalmia and purulent choroiditis. In regard to the transmission of the inflammation from one eye to another, the author thinks that the diseased ciliary nerves in the eye first affected exert a reflex influence on the vessels of the other eye, although he does not deny that direct transmission of the inflammation from one eye to the other may go through the optic nerve or its sheath.

Part IV. concludes the volume with an account of diseases of the ocular muscles, orbits, eyelids, and lachrymal apparatus. We turn with interest to that portion devoted to the management of insufficiencies of the ocular muscles which, in these modern days, have been made responsible for so many neurotic conditions. In it, however, as the editor points out, there is no hint of the doctrine of the great influence upon the general condition of imperfectly-balanced ocular muscles, —a doctrine which Dr. Roosa believes has not yet obtained standing, except among those who are overcredulous as to its immense importance in relation to systemic disturbance. We think that this judgment is a sound one, and that there is a danger among certain ophthalmic surgeons of performing indiscriminate tenotomies, to the detriment of an otherwise important surgical procedure, just as a similar danger is present to gynæcologists in cutting out tubes and ovaries whose crime is not sufficient to justify the scriptural injunction in regard to the hand that offended. The volume closes with diseases of the orbit, lids, and the lachrymal apparatus. The latter chapter is practical enough, but singularly short,—shorter, perhaps, than the very troublesome disorders of this system deserve.

In these days, when the market is stocked with question-books, short manuals, quiz compends, and similar unnecessary specimens of book-making, it is a great gratification to read this thoroughly scientific treatise, now in its third edition, and which has been rendered all the more acceptable by the judicious notes of the editor.

G. E. DE S.

THE PRACTICE OF PHARMACY. Second edition, enlarged and thoroughly revised. By Joseph Remington, Ph.M., F.C.S. With over six hundred illustrations.

Philadelphia: J. B. Lippincott Company, 1889.

It gives us great pleasure to announce the appearance of the second edition of the book of Professor Remington, a work which we believe to be the best of its kind in any language, although, perhaps, as we are not deeply read in Russian, Thibetan, or Chinese literature, we have no right to an opinion in this regard.

Those of our readers who live in the country or in town, who are forced or desire to dispense their own medicines, should certainly supply themselves with a copy of the book. Our many readers who write prescriptions ought to borrow the work from some one at least long enough to look over the chapter upon prescription-writing, in which is held up to the public gaze a reproduction of numerous prescriptions illegible and deadly, crooked and uncanny, the product, it is said, of the brains and pens of successful, and even of learned men. Certainly some doctors, famous, world-renowned, sin against patient and apothecary in their methods of writing prescriptions; but we are afraid that they sin not through ignorance, and that even the flood of light thrown upon their doings by Professor Remington will be of no avail. Blind are they through wilfulness or carelessness, and not through want of light or power of eyesight. Perhaps a term

in the penitentiary would make some of them open their eyes; and we are not sure that they do not deserve this fate.

ESSAY ON MEDICAL PNEUMATOLOGY: A PHYSIOLOGICAL, CLINICAL, AND THERAPEUTIC INVESTIGATION OF THE GASES. By J. N. Demarquay. Translated, with notes, additions, and omissions, by Samuel S. Wallian, A.M., M.D.
Philadelphia and London: F. A. Davis, 1889.

Some years ago the writer of this notice received a most elaborate invitation, printed in gold and glory, from one of the New Jersey County Medical Societies to a banquet at Atlantic City. It so happened that the day was such a busy one that no time for any lunch could be obtained; but the thought of the invitation buoyed up the sinking frame through the long, dreary miles of Jersey sand and the appetite-sharpening meadows of Jersey shore; but, alas! when we were asked to draw to the table and help ourselves there was nothing on the cloth but a little bit of cake for each guest about three fingers' breadth and a teaspoonful of ice-cream; waiters galore, indeed, but nothing for them to hand. So soon as escape from the room was possible, the disappointment of the hour was atoned for in a near-by restaurant, but the memory has haunted us ever since, and was recalled most forcibly by the perusal of this volume. We were hungry for information concerning oxygen, that much-belauded article, "the source of life" to persons, and assuredly a source of gold to the "knowing ones." We have long wished to grapple with it scientifically, and learn the secrets of its physiology. Hungry, therefore, we were, but the book offers as barren a feast as did the hospitality of our New Jersey brethren. We have looked through the volume very carefully, but there is absolutely nothing in it of any scientific value. Talk there is about magnetized and demagnetized oxygen, seemingly most learned reports are there of cases of various and diverse character which have been cured by the inhalation or local application of oxygen and other gases. Poetically does it speak of oxygen as "the great modifier of the blood," as "the soil from which all the organs are developed," and as "the source of animal heat and of the secretions;" but for downright careful, scientific work we have searched in vain. No one yet seems even to know whether more oxygen enters the blood when the gas is inspired than when good, pure air is drawn into the lung. Much astonished have we been in some recent experiments to find that the gas does not register itself in any distinguishable way upon blood-pressure or pulse. At least half-inclined are we to put the results reached by the inhalation of oxygen along with those of hypnotism and metallic therapeutics, and the long list of other procedures, which, upon the mind, influence the nutrition.

Correspondence.

BERLIN.

(From our Special Correspondent.)

The Great Plague—Barmenite, the New Conservative Agent—The Failure of Somnal—Elephantiasis Palpebrarum—Official Warning against Carbon-Sodium Stoves—Medical Examinations—Personal Items.

Never since time immemorial has the aspect of the European situation been so profoundly peaceful as to-day. The knotted Bulgarian and the vexed Eastern questions no longer exist, the triple alliance has ceased to disturb the sleep of the Czar, and Bismarck no longer leads the political concert of the Old World. I need not say more, for you know that an unknown but omnipresent microbe has taken charge of Europe, has stricken down every other person, and, for the present at least, reigns supremely.

As a conscientious correspondent, I thought it proper to observe the nature and symptoms of the influenza epidemic on my own person before venturing to report to you about it. I have been sick but a few days, but I feel and look as if I had been the subject of malarial fever for months, or had just recovered from a protracted sea-sickness. I must confess that there is, aside from the periodical element, no great variance between the symptoms of influenza and those of malaria. I would not hesitate to say that influenza is—as far as subjective sensation is concerned—a diabolical decoction of malaria and muscular rheumatism. Leyden and Hirsch, to be sure, pronounce influenza a catarrhal inflammation of the respiratory passages, marked by nervous symptoms. It is particularly in this lastly-named feature that influenza differs from the ordinary bronchial catarrh. The suddenness of the attack and retreat, the chill, the high fever, and the intense pains in the muscular regions, all point to a marked implication of the nervous system. The etiological relations of the affection are absolutely mysterious. Its microbic character, however, appears quite evident, and also its

march from east to west. That a certain something travelling with the air causes the disease has even been demonstrated by the fact that a ship's crew was seized with influenza exactly at that time when a wind known to have been impregnated with influenza germs passed that part of the ocean where the ship just happened to be. Nothnagel believes it probable that Eastern Russia is the home of influenza, while the Berliners declare that the Czar at his recent visit to Berlin has imported the ubiquitous malady.

The first epidemic of influenza in Europe appeared in the thirteenth century, and in 1789 the whole northern hemisphere of the globe was attacked. In 1831 influenza was the forerunner of cholera, and it is quite an accepted dogma with the ignorant people here that the Asiatic plague will follow the footsteps of influenza in the following spring. "Nihil est sic absurdum, ne sit dictum a philosophe," we will say "a professore medico." This time it is a titled dignitary, and even private physician to the Czar, Dr. Zdekauer, at a meeting of the St. Petersburg Sanitary Society, December 10, said, "Influenza will in the spring be superseded by cholera, for the influenza microbe can be transformed into Koch's comma-bacilli."

Fortunately, the epidemic does not endanger life, and with the beginning of frost is likely to disappear gradually.

The introduction of barmenite, a new conservative agent for meat and other organic substances, can be hailed with great satisfaction. The tests thus far made with the new agent have been surprisingly successful. Barmenite was discovered by Dr. Rüger, of Barmen. The principal constituent of barmenite is chloroborate of sodium. The following experiments* will give you an insight into the efficacy and usefulness of barmenite: 1. A liver and tongue treated with barmenite were kept fresh and unchanged two weeks in June during a hot temperature. 2. Five grammes of barmenite added to five hundred grammes of minced meat, preserved the latter in so intact a state that eight days later it could not be distinguished from fresh minced meat. 3. A pig's liver was kept fresh fourteen days in a ten per cent. solution, and heart, lungs, and kidneys four weeks in a five per cent. solution of barmenite. 4. Freshly twirled beef's and pig's blood was kept fresh eight days, if three grammes of barmenite were added to five hundred grammes of blood. 5. Shell-fish could be preserved intact for five weeks, if treated with a ten per cent. solution of the agent.

The German government is taking particular interest in barmenite. Recently, for the sake of a trial, a whole battalion of the Sixty-fifth Regiment in Cologne was fed with meat which eight days previously had been treated with barmenite. The meat was found to be excellent both in taste and appearance. The new conservative agent is also exceedingly appropriate for the exportation of fat, placed into large barrels.

Professor Liebreich† and Dr. Robinson (assistant of Professor Fürbringer) deserve the hearty thanks of the profession for having in an unmistakable way condemned somnal, the latest hypnotic, the invention of Dr. Radlauer, proprietor of the Pronenapotheke in Berlin.

Liebreich† proves (*vide Therapeutische Monatshefte*, December, 1889) that the chemical statements given by the inventor in regard to somnal are incorrect. "You do not have a clear idea," Liebreich says, "as to what somnal consists of." As far as the reputed hypnotic action of somnal is concerned, both Liebreich and Robinson agree that it is a fallacy. Robinson's *résumé* of the action of somnal is that it exerts an hypnotic influence in about thirty per cent. of cases, and that it has a very undesirable and occasionally even dangerous secondary action on the heart. The latter reason has been sufficient for Fürbringer to abandon all further use of the drug. It is to be sincerely hoped that the profession will refuse to even make a trial with somnal, and that the medical press will not be burdened unnecessarily with pertinent publications.

In the last meeting of the Berliner Medicinische Gesellschaft, Dr. Liebreich made some interesting remarks on a case of elephantiasis of the eyelids. The patient in question presented, instead of eyelids, two immense swellings, closely limited to the normal locality of the eyelids. The consistency of the tumors was on palpation found to be soft and œdematous, leaving on pressure distinct digital impressions behind. The tension of the skin was moderate, and the bones did not appear to be swollen. The etiological aspects of the case were regarded as mysterious. Leucæmia, preceding erysipelas, and various other presumed causes, were, on closer examination,

* Conducted under official superintendence.

† Through the instrumentality of his two assistants,—Drs. Rabow and Langaard.

found to have nothing to do with the affection. Histological inspection having shown that the tumors consisted chiefly of fibrillary connective tissue, the conclusion was ultimately arrived at that the cause of this elephantiasis was some chronic inflammatory process. It was stated in this connection that in tropical countries elephantiasis had often been known to result from chronic inflammation.

That many new inventions, in spite of certain apparent advantages, are often not void of hygienic defects and even peril, is again illustrated by the so-called carbon-sodium stoves, which have recently come into the market, and are enjoying quite a popularity here, because they are advertised to give out heat without smoke and smell. A few cases of intoxication with carbon binoxide, with lethal results, however, having resulted from the use of these stoves, the Berlin president of police warns officially against their use, particularly for dwelling-houses and sleeping apartments.

A glance over the result of the examinations of medical and pharmaceutical candidates is sufficient to show that a medical or a pharmaceutical examination is quite a different thing in Germany than in America. By comparing results, the plain fact will come to light that, even in the best of American medical schools, the examinations are often only a farce. I regret the necessity of using so harsh a term, but it is the truth, and I say, let the truth come out, so that we can profit from it and mend things. As long as I can talk and write I will not cease to fight for higher medical education of the American medical man, until he is the peer of his European brother, and can present himself in Europe without being regarded with a piteous and—it is a fact—contemptible eye. Only one more word about the cause of the inferiority of American medical education. The bane of the profession is the excessive number of colleges, some of which do in reality not deserve even the name of a college. As long as a central medical United States Board is absent, and a single city is allowed to have two to five medical schools, improvement will be a very slow one. Is it known to you that the German universities do not recognize at all an American M.D.? There are one hundred and ninety American physicians matriculated at the University of Berlin, but the official calendar registers none as "Dr."; English and nearly all other foreign physicians are fully recognized. American medical teachers and teaching are excellent, but of the students about one-third only have the proper preliminary training for the medical calling. I shall not speak of the length of courses required for graduation, but I understand there are still such curiosities in the United States as medical colleges with a compulsory two years' course. "They are all honorable men." Now some of the details of the German examinations. The general percentage of failures for medical men in the empire during the last examination was twenty-six,—viz., one hundred and seventy-nine failures out of six hundred and eighty-three. For pharmaceutists this percentage is somewhat lower. The most dangerous place for medical and pharmaceutical candidates is Berlin, the percentage of failures being sixty and fifty. Königsberg and Marburg, respectively, showed the least percentage of failures.

The medical faculty of Berlin to-day is but little representable. Leyden went to St. Petersburg to attend the Czar, Wertzbal is hopelessly ill, Bergmann has the pneumonia, and Lewin is also confined to bed.

BERLIN.

(From an Occasional Correspondent.)

The Influenza Epidemic in Berlin.

The most prominent question among doctors during the last few weeks has been the discussion as to the nature of the influenza. The last meeting of the Society for Internal Medicine was devoted to the study of this affection, the discussion being opened by Dr. Renvers, assistant of Professor Leyden. After some general remarks, the speaker referred to the remarkable manner in which this affection had spread from east to west over the whole of Europe. Since 1837 it had not broken out with such violence. In St. Petersburg, where the disease has its origin, half of the inhabitants were ill. In general the speaker stated that he believed that he had observed two types of influenza,—the one is pure nervous, the other is catarrhal. In both cases the illness begins either suddenly with a severe chilliness, or for a few days the patient feels that he is about to be taken sick, but does not complain of any definite symptoms. In the purely nervous form the patient complains of dreadful headaches, of pain in the whole body, but without cough. In the catarrhal form all the organs of respiration, from the throat to the finest bronchi, are affected. This is the most frequent form. The throat, the hard and soft palate, often show intense serous transudation; while the tonsils are the seat of a follicular

inflammation. Soon the trachea and the finer bronchi are affected; an obstinate cough and a burning sensation in the breast greatly oppress the patient. Sometimes the sputum is bloody, resembling pneumonic sputum. In other cases the catarrh affects the digestive organs. The tongue is thickly coated, an intense fœtor is remarked; in most cases diarrhœa appears. The temperature is generally very high, sometimes rising to 105.8°. The pulse shows, apart from the fever type, no special appearance.

The cases, where the illness did not begin acutely, but were preceded by a prodromal stage, might readily be mistaken for typhoid fever; only further observations could prevent the mistake.

To the constant symptoms of influenza belong violent backache and pain in the whole body.

As complications, pneumonia, whether croupous or catarrhal, are the most important. While at the commencement of the epidemic pneumonia was seldom noted, it now appears very frequently, mostly in old people and young children. In one single case, which is remarkable, nephritis was observed as a complication. This occurred in a patient in the sixth week of scarlatina, who had already had a scarlatinal nephritis. For some days the urine had been completely free from albumen. Suddenly the nurse of this patient fell ill of influenza. Soon after this the scarlatina patient was affected with influenza, and an acute nephritis with bloody urine and albumen appeared. But it is questionable that the influenza was the cause of the nephritis. The prognosis is a very good one. Although about one hundred and fifty thousand cases of influenza have been observed, only very few cases of death were reported, and then through the complication with pneumonia. The illness did not last, in the most cases, longer than two or three days. Sometimes it was over in one day, but the patients suffer still some days of intense weakness and want of appetite. In most cases the fever falls suddenly, and a profuse perspiration announces the approaching health. In only a few cases the fever recedes gradually.

In regard to the treatment, the antipyretics —namely, antipyrin, antifebrin, quinine—have given the best results. Small doses of antipyrin especially brought the patients great relief. The consumption of antipyrin and antifebrin in Berlin was, from the 10th to the 20th of November, greater than ever before, and, remarkable to say, according to the communication, the apothecaries were the only class who have not been attacked by this illness. In general the illness attacks every class, each gender, and every age, only it has been seldom observed in children under 3 years. The most frequently attacked are those people of the age of 25 to 35 years.

A lively discussion by the members of the Society followed the reading of this paper, above all as to the manner of the infection. That it is an infection is beyond doubt. While some of the members believed the illness to be contagious, others disputed this claim. Those who were of the first opinion brought as a proof for the contagion the fact that so frequently all the members of the same family were affected. Some even have made the observation that children brought the infection from school, and their family caught the illness from them. For the same opinion, the doctor of a convent near Berlin, in Charlottenburg, brought a proof, but in a negative sense. In this convent are several hundred pupils, among which girls of a weak constitution are to be found. They are almost entirely shut out from the outer world, and, on the whole, only two or three people come to the convent, who bring food or other necessaries for the household. In spite of the fact that scarcely a single house in Berlin escaped the illness, and the epidemic has constantly been on the increase, no case of influenza has been observed among the many hundred inhabitants of the convent. These remarks caused the doctor to doubt the infection by a miasma vivum, and made him believe that the influenza must be contagious. As namely the convent is entirely shut out from the outer world, a contagion could not follow.

Those who believed that the infection was miasma vivum thought they could support their hypothesis by claiming that many hospital patients did not catch the influenza, although many recent cases of influenza were brought into the same room. At any rate, a decisive opinion as to the manner of the infection is not yet possible.

It seems as if a poisonous seed, which is spread in the air, has been strown over the whole of Europe. It is certainly a microorganism similar to that of scarlatina, measles, diphtheria, the infection of which surely exists, though not yet capable of being recognized.

Although very often the sputum from the wind-pipe, mouth, and nose has been examined in regard to bacteria, a decisive microorganism has not been found.

So much experience seems to have taught

us, that those people who have not left their room in the last weeks have not been attacked by the influenza.

LONDON.

(From our Special Correspondent.)

The question of the contagiousness of consumption was the subject of two lectures recently delivered by Dr. Herne at the Victoria Park Chest Hospital. It is a question of deep interest not only from the pathological point of view, but from that of treatment of hygiene. Even before the days of the tubercle-bacillus there was some clinical evidence to show that wives who married consumptive husbands might develop phthisis, even though there was no family predisposition. There was also some pathological evidence to show also that the disease (tubercle) could be communicated to animals by the subcutaneous inoculation of tubercular material. Wilson Fox's experiments for a long time misled the profession in England, for by his work it seemed that the inoculation of various morbid products might produce tubercle in guinea-pigs and rabbits, not only the product from tubercular lesions but those from non-tubercular abscesses, etc.; and, finally, that the introduction of a seton was sufficient to cause tubercle in these animals. Before his lamented death, Wilson Fox publicly negatived the results of his previous experiments at a meeting of one of the learned societies: this was a rare instance of candor, one to be emulated, showing that Wilson Fox was only anxious for the truth. Koch's remarkable discovery was prepared for by Cohnheim's interesting experiments on the inoculation of tubercle in rabbits; and the discovery of the tubercle-bacillus clinched the conclusion by showing the *materis morbi*.

There are many in England who do not yet appreciate Koch's discovery: the medical profession is a conservative one, and does not readily discard old ideas, or willingly receive new ones. But the believers in Koch's results are getting a wider and wider circle in our country, and include, it would not be too much to say, the most eminent scientific members of the profession. And it would, indeed, be impossible to imagine how any impartial student of Koch's work, confirmed, as it has been, by many independent observers, can fail to accept his result that the primary cause of tubercular disease is due to a specific micro-organism,—the bacillus tuberculosis. And if this is accepted, it will readily be appreciated what new light is thrown on the whole question. It would be out of place here to speak of the pathological results obtained by Koch or his successors. But the newer developments of the subject are becoming of great importance in practical medicine. These newer developments are the question of the contagiousness of phthisis, dealt with by Dr. Herne in his interesting lectures, and the question of the antibacillus treatment of the disease.

The practical aspect of the contagiousness of phthisis is evident from several considerations. We have the fundamental fact that the tubercle-bacilli is the initiative of the disease,—phthisis; we have also the fact that the expectoration of patients with phthisis contains bacilli, often in great quantities, the number present bearing some relation to the rapidity with which the caseated masses in the lungs break down into cavities. The expectoration of the bacilli is thus the means of infection, supposing that it does occur; and considering the greater number of cases of this dreadful disease, which exist especially in temperate climates, it is evident what a large number of bacilli may be present on handkerchiefs and other articles of apparel. The bacilli are also in the streets and in the rooms inhabited by phthisical patients, if the sputum is not carefully collected. That this is not simply theory is shown by the fact that tubercle-bacilli have been found on the walls and the floor of rooms inhabited by phthisical patients, who had not been particularly careful as to the disposal of their expectoration. This fact was quoted in the lectures referred to, and was supplemented by the statement that one or more cases of phthisis were traced to this mode of infection. This statement, however, is very difficult of proof. The history of cases of phthisis demonstrates to us that the disease arises very commonly in persons who do not mix with phthisical patients, who have no family history of the disease, and in whom there is no assignable cause for the lesion. But although difficult of proof, such a statement ought to put us on our guard against this *possible* mode of infection, especially when the other better-known cases of the contagiousness of tubercle are taken into consideration. Cases have now been published in Russia, Germany, and in England where a local tuberculosis followed the rite of circumcision. This rite, as practised by the Jews, consists in circumcising the prepuce, and stopping the subsequent hemorrhage by means of suction with the mouth. In the

Russian cases, the operator (not a doctor) was the subject of phthisis, and many of the children operated upon had a local irregular induration, which was followed in some cases by tubercle in the lungs, in the meninges, and in the peritoneum. Such cases, indeed, seem sufficiently definite of contagion of tubercle. There are other cases which are also important from this point of view. Thus, a local tubercular lesion has been ascribed to the use during operation of a knife not properly cleansed. In such lesions tubercle-bacilli have been found after excision: there is no doubt, therefore, of their nature. There is also the so-called post-mortem wart,—verruca necrogenica,—which has been proved in many instances to contain the tubercle-bacillus. It is a local growth, not uncommonly met with in the hands of those who habitually perform post-mortem examinations and of post-mortem-room porters. Probably all post-mortem warts are not tubercular in nature; in some, indeed, the tubercle-bacillus has not been found. When we speak of the contagiousness of consumption, the idea is vigorously combated, as if the question were of the rapid infection which occurs in cases of acute infective disorders. The growth of the tubercle-bacillus is a slow one, and the lesions produced only slowly depurate. The rarity of consumption in the residents (house-physicians and nurses) of consumption hospitals shows, indeed, that the disease is not readily propagated from one person to another. But in hospitals, it must be remembered, the sputum of the patients is carefully disposed of, and there is no evidence to show that the breath of the patients causes infection. In fact, the experiments undertaken by Dr. Herne, with the view of settling this point, were decidedly negative as to the expired air of phthisical patients containing any tubercle-bacilli. From the facts that are known, it seems obligatory to turn one's attention to the disinfection of the sputum, and there is no doubt that this ought to be performed, as, in fact, it is already done in some parts of Germany. Such disinfection might readily be carried out by means of heat, but there is little doubt that the use of corrosive sublimate, the most efficient germicide known, is best for the purpose.

One other aspect of the question of the contagiousness of tubercle has lately come into prominence in this country. This is the question of the value of the flesh of tuberculous cattle as food. In several instances lately in the north of England or in Scotland, the authorities have condemned the meat of such cattle as unfit for human food: these decisions have been vigorously contested. In favor of this condemnation, the regulations in vogue among the Jewish community are often quoted. The Jews are, as is well known, a race remarkably free from phthisis, and this immunity has been ascribed to the great care with which their meat is inspected; so that not only is obviously diseased meat rejected, but the apparently healthy meat of diseased animals is also considered unfit for human food. In this way the flesh of tuberculous cattle is not used by the community. A tuberculous cow may yield meat perfectly normal in appearance and consistence, or the meat may itself be affected with tubercle; it may be studded with "perles," as the tubercles are called. There is no doubt whatever that meat in which there is a deposit of tubercle ought to be rejected as unfit for human food, as not only is there *à priori* a danger of infection of the heart, but the quality of the meat as a food is deteriorated. It is quite true that the tubercle-bacillus will not withstand a temperature of 42° C., and that the temperature of the internal parts of the meat during cooking is higher than this as a rule; but the temperature of underdone meat is very low, and meat is often eaten in this condition, so that it is best to reject the meat. It is a question, however, whether the apparently healthy flesh of tubercular cattle ought to be allowed for human food. Such meat has been shown by examination to contain no microscopic deposits of tubercle and no tubercle-bacilli, and the expressed juice has been injected into rodents without tubercle appearing in the animals. In fact, this meat from tuberculous cows is indistinguishable (so it is stated) from the ordinary meat from healthy cows. If this is so, it must be considered as theoretically fit for human food. But who is to decide this? We are met with the practical difficulty of deciding the question; for it is not sufficient to make a naked-eye examination of the meat; microscopic sections must be cut, and tubercle-bacilli searched for both in the sections and in the expressed juice of the meat. The arrangements for the inspection of meat, at any rate in this country, are totally inadequate to meet the requirements of such minute investigations. The inspectors of slaughter-houses are not at present competent to cut sections and look for tubercle-bacilli, and it does not seem a definite part of the duties of the medical officer of health to do this. Until such arrange-

ments for the minute investigation of meat are made, it is certainly best to reject the meat of all tuberculous animals as unfit for human food, when such meat is obviously tubercular or not. This is the line on which the authorities have lately gone, to the dismay of the butcher. But the health of the community is too serious a subject to sacrifice for the pocket of individuals, and every impartial person must consider the authorities justified in their action.

In my next letter I will consider the anti-bacillic treatment of tubercular disease.

PARIS.

(From our Special Correspondent.)

Not the Dengue, only Grippe or Influenza—The Estimation of Glucose in Urine—Petroleum a Sure Cure for Itch—End of the Motte-aux-Bois Vaccine Controversy—Physicians as Experts in Medico-Legal Cases.

One subject now overshadowing all others, even politics, is the prevailing epidemic which has brought down one-half of the Parisian population. At first, owing to its coincidence with the breaking out of dengue fever in Russia, all took it for granted we were in for a taste of dengue too, an experience hitherto unknown in this latitude. But physicians, after carefully observing their patients and comparing notes, have come to the conclusion that the present epidemic is not one of dengue, or anything like it. We simply have a sudden breaking out of a well-known affection, called here *grippe*, and in America *influenza*, a time-honored domestic complaint, so familiar as to be considered endemic. Every winter witnesses various slight outbreaks here and there. This season, for some unknown cause, it has spread everywhere with astounding speed, and spared neither age nor sex. In consequence, all Paris, in-doors or out, has the appearance of a grand coughing and sneezing concert, in which every one plays his or her little solo, without regard for time or music. Some years since your correspondent was in Florida, just after an epidemic of dengue fever, the real one without doubt. All the patients had recovered, but the symptom most striking to them all was the pain they had felt in the joints and bones. Some would almost shudder when relating their experience. Indeed, so characteristic is this feature considered, that "breakbone fever" is the popular name of the complaint. This symptom is entirely absent from our present Parisian epidemic, and so are the eruptions, desquamations, etc., mentioned by authors conversant with dengue. The medical profession unanimously agree with the Academy of Medicine in declaring the sickness to be, not dengue fever, but a rather severe form of grippe, or influenza, and in good justice it is bad enough as it is.

The estimation of glucose in urine, the crucial test of some medicaments' therapeutic value, is a delicate process, which is not always interpreted alike by all experimenters. Dr. Blarez, professor of chemistry at the Bordeaux Faculty of Medicine and Pharmacy, has found an ingenious way to test the accuracy of the various methods. "The estimation," he says, "may be made with Fehling's solution, in which case the liquor should be titrated, so that ten cubic centimetres of it, diluted with an equal volume of distilled water, will be just decolorized with .050 gramme of inverted sugar, dissolved in 100 or 200 parts of water. The old method consists in considering inverted sugar and diabetic glucose alike in reducing power. On the contrary, Sohxlet, a more recent experimenter, avers that the ten cubic centimetres of Fehling's correspond only to .0475 gramme of anhydrous glucose. The same discrepancy occurs in regard to the interpretation of optimetrical observations." The other day an opportunity was found of deciding the question. A young man, aged 17, who applied to him for treatment, proved to be a real live sugar-factory. He daily produced two gallons of urine, containing for each litre 93.80 grammes of diabetic sugar, or some twenty-four troy ounces every twenty-four hours. With such a patient it was easy, before treatment could begin to take effect, to prepare sufficient quantities of pure diabetic sugar of undoubted genuineness. Experiments made with it have demonstrated that, so far as valuation with Fehling's solution is concerned, the old figures formerly accepted are correct and the pretended correction a mistake. Preliminary trials with the spectroscope tend in the same direction, but more time is needed to bring the matter to a sufficient degree of accuracy.

Dr. Bourgeois, of Noailles, reports that for several years past he has obtained excellent results from the application of petroleum in itch, and now invariably cures the disease within three days, at most, with the following procedure: On the first day, before bedtime, the patient is to gently anoint his whole body, except the head, with kerosene, rubbing it in especially in parts most affected. After which he is to put on his old shirt again and retire.

Next morning the oily substance is to be washed off with white Marseilles soap and lukewarm water, clean underwear replacing that worn at night. On repeating the process three nights in succession, complete cure will invariably follow. Now and then the patient will, owing to itching, lose his first night's sleep, but the trouble never occurs a second time. Dr. Bourgeois remarks that the treatment is not only most simple, but also inexpensive, an important consideration, as such patients generally belong to the poorer classes. A quart of kerosene and a piece of soap is all that is needed. He also considers the application harmless, as he has used it with 8-year-old children; with younger ones, however, he would hesitate, and probably abstain.

The Motte-aux-Bois vaccine controversy was officially closed before the Academy of Medicine by a report read, on November 26, by Dr. Hervieux, who had been assisted in his final examinations by an English practitioner, "Dr. Thorne Thorne, director-adjunct of the local government board." After closely examining every one of the patients, they found them all completely and absolutely cured. All the ulcerations had healed up, all indurations disappeared, and not one symptom could be detected of secondary syphilis. In consequence the late outbreak, which so deeply excited the whole rural population, is now officially declared not to have been of a syphilitic nature. At the same time the Academy will not undertake to decide what was the nature of the affection.

For years the French medical profession has kept protesting against the shabby treatment forced upon them by lawyers. Legal gentlemen who are not in the habit of laboring gratis for Dame Themis, their patroness, take advantage of an obscure law-text, dating from 1811, to compel physicians to act as experts in medico-legal cases, for a remuneration absurdly inadequate. At last, patience ceasing to be a virtue, the physicians of Rodez, a small southern town, decided to refuse their services, and test the law and lawyers. Near the end of August last the body of a girl, supposed to have been murdered, having been found in the woods, five physicians of Rodez were required by a justice to view the body and report. They unanimously refused to obey the order, under the plea that the law applies only to *flagrante delicto* cases, and they could not be compelled to act as experts in a case like the one in point, in which death had evidently taken place several days before. Next the recusant physicians were summoned, on October 4, before the Rodez justice of the peace, who sentenced them to a nominal fine of six francs (one dollar and twenty cents) each. But, on appeal (near the end of November), the Rodez correctional tribunal reversed the judgment and remitted the fines, holding that the defendants had not violated the law. It is unnecessary to add that the Rodez case made considerable noise all over the country. The medical profession took advantage of the excitement to air their grievances and try to obtain redress. They remarked, with good reason, that about courts of law every one lending his aid to the courts of justice—judges, lawyers, witnesses, jurymen, and even expert chemists—will receive suitable compensation. The physician alone is expected to do expert work for a boy's salary. For instance, for a *post-mortem* the law allows him from five to nine francs (one dollar to one dollar and forty cents), less than a knacker gets for opening a horse. Finally, so much noise was raised on the subject, that the question forced itself upon Parliament. On December 9 it was the object of an interpellation in the Senate, and there is every hope that the matter will be equitably adjusted. And the singular part of the Rodez affair is that the real point at issue—the question of remuneration—never came before the courts. All the fuss and trouble has been about a side complication, which no one cared for in the least. But no matter, the medical profession have gained their point, and compelled the legislature to pay some attention to their just grievances.

PARIS, December 20, 1889.

CONTAGION OF SCARLET FEVER.

To the Editor of the THERAPEUTIC GAZETTE:

DEAR SIR:—The article by Dr. H. C. Wood on the "Duration of the Contagion of Scarlet Fever" recalls a similar one to my mind, the recital of which may interest you. Three years ago one child of Mr. C. Nismer, a large restaurant keeper here, 608–10 K, N. W., was taken with scarlet fever and subsequent diphtheritic invasion. The three remaining children were at once removed to an upper story, completely isolated for six weeks. During the fifth week the whole lower floor was cleaned; bedding boiled, destroyed; walls, furniture, etc., scraped, repapered, scrubbed, aired, disinfected; everybody bathed, etc.; in short, the most complete precautions taken

to remove any possible contagion which modern ingenuity could devise. The second night after reunion the next youngest child was taken with severe scarlet fever; within the week the two others also contracted it in a most violent form, the subsequent diphtheria being very persistent. Fortunately, all got well.

A number of cases, being removed from other houses at once and kept away for four weeks, contracted it within a week after reunion. The case recited above, however, is the most striking in my experience of the futility of isolation in any domicile and under conditions usually met with.

Respectfully,
R. G. MAUSS, M.D.

[We do not think that the case reported by Dr. Mauss shows the futility of isolation, as he intimates, but, especially in the light of the cases reported by Dr. Wood, it shows that six weeks' isolation is not sufficient in scarlet fever. In Dr. Wood's case the second child who took the disease was not brought back to the house where the disease had been, but certainly took it from the person of the first patient, and it is probable that in Dr. Mauss's case that the room was thoroughly purified, and that the disease originated through contact with the first case.—ED. THERAPEUTIC GAZETTE.]

NITRO-GLYCERIN AS A REMEDY FOR SHOCK.

To the Editor of the THERAPEUTIC GAZETTE:

DEAR SIR:—The article by Dr. F. X. Dercum, in the GAZETTE of October 15, on "Railway Shock and its Treatment," suggested to me the advisability of offering the following for publication:

Mrs. C., on April 7, 1889, had a chill, followed with fever and pains in side. Was called to see her next morning, and found her with croupous pneumonia. The case proved to be very stubborn from the outset, but on the eighth day there was a change for the better, and I expected that recovery by resolution would take place, but about 2 A.M. the following night she was seized with a severe pain in her side, so much so that I was called up to see her. I found her suffering a great deal from pain and prostration. My efforts to relieve her were fruitless for some time. I left her at 8 A.M. to make some other calls, and on my return at 10 A.M. found the family standing around the bed very much excited. I hastened to examine Mrs. C., and was convinced from my examination that she was dying. Her pulse was almost imperceptible at wrist, the heart-beat very weak and accelerated, the skin cyanosed and moist, with cold, clammy perspiration. I could not note her respiration accurately from the fact she was trying to talk to those around her all the time. I was puzzled to know what to do; but calling to mind some recent utterances on nitro-glycerin in collapse, I at once decided to try the remedy, and gave her 5 drops of a one per cent. solution hypodermically. In five minutes her heart-beat was much stronger, and I could easily feel her subdued pulse. The surface gradually regained its warmth and normal color. Dr. Dismaker arrived at this time, and he advised the several hypodermics which I gave her. This was about 11 A.M. By 2 P.M. her symptoms were much better. After a careful examination we decided she was suffering from the second attack of pneumonia, which proved to be correct by the subsequent history.

I hope that I will be pardoned for reporting so much in detail a case that appears at first sight to be foreign to the subject, but the symptoms of collapse in the above case resemble so much those of railway shock described by Dr. Dercum that it occurred to me that nitro-glycerin would prove valuable in the treatment of the latter. Hence I write this note, hoping that it may elicit investigation from those who have an opportunity of treating railway shock, and that they will report the result of their investigation through the GAZETTE.

Yours truly,
B. W. ALLEN, M.D.

FLANIGAN, ALA., October 26, 1889.

THE DOSE OF GELSEMIUM SEMPERVIRENS.

To the Editor of the THERAPEUTIC GAZETTE:

DEAR SIR:—I see on page 429 of THERAPEUTIC GAZETTE for June, 1889, that Dr. Wharton Sinkler concludes that from 15 to 25 minims of fluid extract of gelsemium sempervriens is entirely too large a dose, and you agree with him. I have been using gelsemium for the last seventeen years, and have given as much as 125 minims of fluid extract without the least bad effect. I give it to infants and in old age, and for things too numerous to mention at this time. The reason that most physicians do not get any

better results from gelsemium is that it is not pushed far enough.

We frequently give 40 minims for sick headache, combined with 60 grains bromide of potassium, inside of hour.

Your most obedient servant,

DR. T. L. LALLERSTEDT.

PAOLA, GA.

[We print this letter, which was received some time since from Dr. Lallerstedt, but was for a time mislaid. The subject is one of practical importance, and the only conclusion that we can draw is that the fluid extract which the doctor has used is a remarkably inert preparation. The recorded cases in which serious or fatal symptoms have been caused by doses not larger than those used by Dr. Lallerstedt seem to show that his doses are unsafe with an active preparation; thus, 2 minims of the fluid extract, given three times a day, are reported to have produced very distinct symptoms. In a case put on record by Dr. Freeman, a quantity of the tincture, equivalent to about 12 minims of the fluid extract, proved fatal to a boy 3 years old; in another recorded case 35 drops of the tincture caused death in a day and a half; again sixty minims of the fluid extract, given in doses of 15 minims, at short intervals, was followed by a fatal result in less than four hours, and a teaspoonful of the extract of gelsemium given to each of two children caused death in three hours. Dr. Seymour records one case in which a teaspoonful of the fluid extract proved fatal to a young lady; in one case 10 minims of the fluid extract, repeated after half an hour, caused violent symptoms with collapse soon ending in death.—ED. THERAP. GAZ.]

SULPHONAL AS A HYPNOTIC IN TYPHOID FEVER.

To the Editor of the THERAPEUTIC GAZETTE:

DEAR SIR:—I wish to report a case of typhoid fever in which one of our comparatively new remedies did most noble, or, I should say, most valuable work. On August 28, 1889, I was called to see Mrs. F., aged about 22, who was in her second week of the severest case of typhoid fever it has ever been my lot to treat in a practice of nearly nineteen years. She could not sleep; lay in that state styled coma-vigil until she became wild and maniacal. She began to talk wildly and wanderingly at 10 P.M., and continued to talk incessantly until the next night about the same hour, when she came under the influence of a 20-grain dose of sulphonal, given some hour or two previously. She slept soundly until about two or three o'clock next morning, when she awoke, when another dose of sulphonal was given. She fell asleep from this, and slept soundly till about seven o'clock, or about four or five hours more. She awoke for a few minutes, and appeared perfectly clear in her mind. She soon fell again into a slumber, and continued to sleep the greater part of the day. This was the last of the coma-vigil, and the nervous system remained in a very good state during the remainder of her illness, without giving any more hypnotics. She slept very well at nights after this, although she was confined to the bed with the fever for three or four weeks longer. I tried chloral, bromides, monobromated camphor, camphor-water, valerian, and other hypnotics, but none of them would do any good towards giving the nervous system rest, and I can say in this case the sulphonal was *the* hypnotic *par excellence*. Of course this one case is very little to decide the value of the remedy, but it is a slight pointer to act upon, and, perchance, others may try it in their cases of typhoid fever, and report as to its value in the THERAPEUTIC GAZETTE.

J. POWEL BAIRD.

GREENVILLE, TEXAS.

REMARKABLE TOLERANCE FOR MORPHINE.

To the Editor of the THERAPEUTIC GAZETTE:

DEAR SIR:—The following case of a male, colored, æt. 32, porter, is interesting, as illustrating the large amounts of morphine which may sometimes be given with impunity.

No syphilitic history. Case came under observation September, 1889, with remittent fever of three weeks' duration. Fifteen days after defervescence of fever, and while patient was still convalescing, the attention of the reporter was called to a swelling situated in perineum, midway between scrotum and anus. It was about size of half an egg, soft and fluctuating, quite painful, and throbbed subjectively. Temperature, 102°; pulse 100.

Diagnosis.—Perineal abscess; had a bistoury been at hand this would have been immediately incised, and probably no further trouble would have been experienced.

Next morning it was found that during the night the abscess had broken into the rectum. The perineum, from scrotum to anus, and for three or four inches on each side of perineal raphe, was intensely swollen, and studded with eight or ten fistulous openings, through which escaped gas and fæcal matter.

On the second day after this condition was observed, all the parts involved as above described were found to be thoroughly necrosed, and, beginning to slough, were entirely removed, and sphincter ani divided, in order to facilitate escape of gas and fæcal matter. The removal of the gangrened tissue revealed the muscles accellerator urinæ, transversalis perinei to attachment to tuber-ischii; erector penis; a portion of gluteus, maximus, and the sphincter ani with its attachment to coccyx. The line of demarcation was well defined. The patient's physiognomy presented the distressed, anxious appearance characteristic of gangrene. Temperature, 102½°; pulse, 140 and quite feeble; respiration, 38; abdomen very tympanitic and low, muttering delirium existing.

A euthanastic (if the coinage of a new word is permitted) dose of morphine, 2½ grains, was administered hypodermically at night. Next morning patient was perfectly rational, and called vigorously for food. Milk, egg, and whiskey were given every four hours. Considerable suffering still existing, 2½ grains morph. were given, and same dose repeated night and morning for two days, when this quantity was found to be insufficient, and was gradually increased to 7 grains three times a day until the tenth day after the occurrence of the gangrene, when the patient died of exhaustion. Wound was irrigated twice a day with a one per cent. carbolic solution, and dressed with absorbent cotton and iodoform. Patient had never used any opiates previous to this occurrence. The remarkable features of the case are—

1. The rapidity of formation, and the large number of fistulæ after rupture of the abscess.

2. Rapidity and extent of necrosis of tissue.

N.B.—This probably would not have occurred at all had not the tissues been more or less degenerated, as result of previous fever.

3. The large quantity and rapid increase in dose of morphine administered to produce analgesia and stimulating and tonic effect.

C. HOLZCLAW, M.D.

Notes and Queries.

THE NEW HYPNOTICS—SULPHONAL, AMYLENE HYDRATE, HYDROBROMIDE OF HYOSCINE, HYPNONE, PARALDEHYDE, AND URETHAN.

At the sixth annual meeting of the New York Medical Association, held in New York in September last, DR. W. H. FLINT, of New York, opened the discussion as to the "Therapeutic Application, Contraindications, Toxicology, and Methods of Administration of the New Hypnotics." Although most of the facts contained in his address have been already laid before the readers of the THERAPEUTIC GAZETTE, we publish a full abstract of his paper, since it is largely based upon his own personal experience with these drugs.

The object of the present discussion was to give a summary of the therapeutical applications, contraindications, toxicology, and modes of administration, and in some cases to give the physiological action of these hypnotics with a view to throw some light upon the relative merits of the individual remedies. The writer desired to accomplish his part of the discussion by presenting a *résumé* of the most important papers on this subject which had come to his notice, adding thereto the results of his own observations. The group of somnifacients to which attention was invited comprised sulphonal, amylene hydrate, paraldehyde, urethan, and hypnone. In respect to sulphonal, he could report thirty-three cases treated, with the following conclusions arrived at: That sulphonal, even in single doses of 20 or 30 grains, was in the main a safe and reliable hypnotic, free from unpleasant concomitant effects, and usually from all undesirable sequelæ. The only objectionable after-effect witnessed by himself was moderate somnolence on the morning following its administration; in none of the cases was there derangement of the appetite or digestion, nor was the circulation or respiration appreciably affected. The cutaneous and renal secretions were neither increased nor diminished, and nausea, vomiting, or constipation did not follow the use of the drug. The average length of the time in which sleep ensued after the administration of sulphonal was about an hour. The average duration of the sleep was a little over six hours, and success attended the use of the drug in about eighty-seven per cent. of all the cases. Since his early experiments with the drug had been published, about a year ago, he had constantly employed it in private and hospital practice, and it had continued to

favorably impress him. Reviewing his own experience and that of others, he concluded that the physiological action of sulphonal had not yet been satisfactorily established, although notable contributions on this subject had been made during the current year. Sulphonal was chiefly valuable in nervous insomnia, in some forms of insanity, notably in acute maniacal conditions, in acute sthenic febrile diseases, the opium habit, in conditions of gastric irritability, at least temporarily in neurasthenia, and in some cases of anæmia. The effects of the remedy had been generally better in his experience where the patients were strong and plethoric, and in these cases the after-effects were most frequently absent. Sulphonal was contraindicated because of its comparative uselessness in insomnia from pain, cardiac dyspnœa, gastrectasis, congested stomach, etc. The causes of this failure in the presence of pain, cough, and dyspnœa seemed to be its slight narcotic action, and in gastrectasis, chronic gastritis, and gastric congestion its slow solubility. It seemed to be contraindicated on account of its possible hurtful effects in great physical prostration, in acute melancholia, and in insanity after abortion, after labor, and perhaps in sclerosis and in angina pectoris. Clinically, toxic symptoms did not generally follow the use of sulphonal in adult cases until 30 grains or more had been given at one dose, or in doses quickly succeeding each other. It must, however, be conceded that small doses did sometimes act unfavorably owing to individual idiosyncrasies. The milder toxic symptoms from sulphonal were fatigue, depression, tinnitus aurium, and nausea. The writer had also seen marked pallor and œdema beneath the eyelids in several cases in patients waking from sleep after taking sulphonal.

The graver symptoms thus far reported were diarrhœa, aphasia and ptosis, a cutaneous eruption like that of rubeola or urticaria, brachycardia, inco-ordination, semicoma, and collapse. Sulphonal should be administered by the mouth in hot beverages or in hot liquid foods an hour or more before its effects were desired. Its use by the rectum was not generally satisfactory. He would urge the necessity of employing only the pure sulphonal, as some bad results had come, no doubt, from the use of a spurious article.

There was no need for alarm at the sensational statements of some authors who had used too large doses, or had used the drug when it was contraindicated. The dose should be carefully adjusted to the requirements and peculiarities of each case, and since the effect of a full dose was often felt on the second or third night after its administration, it was well to decrease the dose on these nights whenever the drug must be given uninterruptedly for days or weeks. He had not seen evidence yet that the sulphonal habit existed, nor had he seen any cachexia or dyscrasia which could be fairly attributed to the drug. Favorable effects had resulted in about eighty per cent. of his cases. Children took it readily and tolerated it very well.

Amylene Hydrate.—This hypnotic, the speaker said, he had employed in thirty-eight cases of insomnia from various diseases. In these, success had resulted in sixty-seven per cent. Upon the basis of his own experience and that of the authorities, he had reached the following conclusions: The physiological action of amylene hydrate was similar to that of alcohol. In therapeutical doses it produced sleep by its soporific action on the cerebrum. In toxic doses it paralyzed the cord and medulla, finally abolishing the reflexes, arresting the respiration, and paralyzing the heart. It was applicable, therapeutically, to insomnia from nervousness, from excessive mental exertion, from anæmia, fevers, insanity, cardiac diseases, the opium habit, and from the withdrawal of narcotics that had been constantly employed. It was contraindicated because not efficacious in insomnia from pain, cough, and often in cardiac and uræmic dyspnœa. Its use by the mouth was contraindicated in gastric diseases attended with irritation or nausea, because of its irritating character, but it might be given by the rectum in such cases. It should not be given to fastidious patients on account of its taste and odor, and children did not generally tolerate it for the same reason. The toxic effects from therapeutical doses were generally unimportant, consisting of headache, slight nausea, gastric distress, and thoracic oppression. Serious symptoms sometimes followed, as loss of reflexes, paralysis of the extremities, mydriasis, low temperature, feeble pulse, and superficial respiration. Amylene hydrate was best given by the mouth, in soft capsules, or in mixture, or solution, disguised by peppermint water, raspberry syrup, or extract of licorice. The mixture should be thoroughly shaken before being used in order to avoid an overdose being taken. The dose for adults was 30 to 45 grains by the mouth and 45 to 75 by the rectum. The author had never seen any cases in which an amylene hydrate habit had been engendered or a cachexia due to the remedy developed.

Paraldehyde had been used by the author in thirty-five cases of insomnia from a variety of

causes for the purpose of comparing its effect with other hypnotics. The doses had varied from 60 to 90 minims. Successful results were obtained in seventy-two per cent. of the cases. The writer's inferences, drawn from his own studies, were as follows: The remedy in moderate therapeutic doses acted like ethyl alcohol, producing sleep by its hypnotic action on the cerebrum. This sleep was, however, preceded by a brief period of excitement, during which the reflexes were augmented. In larger doses it paralyzed the spinal cord and abolished the reflexes, finally arresting respiration by paralyzing the medulla. It also exerted a paralyzing action on the vaso-motor centres. Like amyl nitrite, it caused central myosis and stimulated intestinal peristalsis. In full doses it slowed and tranquillized the respiration. It did not notably affect the temperature, but sometimes caused a slight diaphoresis; the blood-pressure was slightly reduced by small doses, more markedly so by large ones, and the pulse was somewhat slowed. Paraldehyde did not particularly irritate the stomach. It was not yet decided whether it produced methæmoglobinæmia. The remedy was not indicated in the insomnia of acute and chronic melancholia, epileptic dementia, acute alcoholism, the opium habit, hypochondriasis, hysteria, neurasthenia, chronic gout, exhaustion from overwork, dyspnœa, or the cough of pulmonary diseases. Paraldehyde was contraindicated in cases of cyanosis, with depression of the respiratory centre, as in advanced emphysema and cardiac dilatation, in painful diseases, gastric ulcer, and gastritis, or in pharyngeal and laryngeal ulceration, and was to be used cautiously in anæmia, as it might reduce the oxyhæmoglobin of the blood. The milder toxic effects were headache, nausea and vomiting, vertigo, and slight cerebral congestion. In powerful toxic doses it produced deep sleep with anæsthesia, then abolition of the reflexes, and death from paralysis of the respiratory centre. Paraldehyde might be given a long time in moderate but yet effective doses, with no harmful results. If, however, too large doses were given for a long time, tremor of the hands, œdema, anæmia, delirium, and a condition resembling chronic alcoholism might be developed. In a rabbit poisoned by relatively large doses of this drug, fatty degeneration of the liver was produced. It was best given in soft capsule or disguised with cinnamon-water or compound tincture of cardamom. The average dose for an adult was 1 drachm. It should not be given subcutaneously, on account of the local irritation and pain which it produced, nor could it be given by inhalations, as it acted too slowly and was apt to be irritating. It did not seem to have an accumulative effect, nor was tolerance of the remedy established.

Urethan the author had tried in forty-two cases of insomnia, and found it to be possessed of moderate hypnotic qualities, although insufficiently powerful to successfully rival the remedies already mentioned. In regard to the physiological action of urethan, we had the authority of Schmiedeberg for the statement that large doses of the drug produced loss of mobility with insensibility and unconsciousness. The respirations were increased in depth and frequency, and the heart-beat steadily sustained the blood-pressure at the normal point. Sensation persisted much longer than motion, and the temperature fell. The reflexes were but little affected in the urethane sleep. Diuresis and diaphoresis sometimes occurred. Urethan was best applied therapeutically to insomnia in cardiac diseases without great dyspnœa, and to cases of moderate mental excitement. When sulphonal, amylene hydrate, and paraldehyde were too powerful, it might render good service in insomnia for melancholia. Urethan was contraindicated in insomnia from pain and cough, as it had no anodyne properties, nor was it powerful enough for use in delirium tremens or in mania. It could scarcely be said to have toxic effects until very large doses—as, for instance, 180 grains—were taken. In some cases it had been known to cause nausea, somnolence, and gastric distress. Being soluble in 2 parts of water, and being very free from offensive taste, urethan might be given by the mouth or by the rectum. In aqueous solution it might also be used subcutaneously. The adult dose varied from 15 to 30 grains, and for children from 12 to 18 grains was a fair dose; from 2 to 3 years old, 8 grains; and from 4 to 14 years, 15 to 20 grains. The average dose for subcutaneous use was 4 grains.

Hypnone.—The author's experience with this drug was too limited to justify him in formulating conclusions based upon his own observations. From that of others he decided as follows: Therapeutically, it might be used in the absence of a better hypnotic in primary or nervous insomnia, but its effects were very uncertain, and, tolerance being soon established, larger doses were required than at the beginning of the treatment. It was contraindicated in sleeplessness from cough, and was not to be given to patients with feeble stomach. It was best administered in doses of from 3 to 7½

grains, in capsules or almond oil. His own experience with hypnone had, however, been so disappointing that he had practically abandoned its use.

THE TREATMENT OF CHRONIC METRITIS BY CHLORIDE OF ZINC PENCILS.

DUMONTPALLIER brought forward one hundred and twenty cases of chronic, muco-purulent, and pyo-hemorrhagic metritis treated by him by means of pencils of chloride of zinc introduced into, and left in, the uterus. In ninety-six out of one hundred cases he claims to have effected a cure without any accident, but in the other four some peri-uterine inflammation was set up, though of a mild character and attributable to the patients having left their beds too soon. The cure may be considered as effected two days after the slough has come away,—*i.e.*, from nine to fifteen days after the operation. No atresia of the cervix usually follows the application, but he suggests the propriety of passing a sound about three weeks later. No complications were noted in respect of the Fallopian tubes or ovaries. When menstruation returned, it was free from pain and of normal duration. He first irrigates the vagina with a $\frac{1}{1000}$ solution of sublimate, and having ascertained the depth of the uterine cavity, he then introduces a pencil of the proper length. A plug of absorbent cotton is placed in the posterior *cul-de-sac*, and retained *in situ* by means of some iodoform gauze. The patient, as a rule, experiences but little pain, but, if severe, it should be overcome by means of a subcutaneous injection of morphine.—*London Medical Recorder*, October 21, 1889.

A NEW DIAGNOSTIC SIGN OF ABSCESS OF THE ANTRUM.

The *London Medical Recorder* for October 21, 1889, says: At the Congress of Otology and Laryngology, held at Paris last month, DR. T. HERYNG, of Warsaw, described a new diagnostic sign to which his attention was called by the late Professor Voltolini. The room being darkened, the patient's mouth is lit up by means of a small electric lamp placed above the tongue. Two spots of very bright red, of greater or less extent, according to the size of the antrum, then become visible below the lower eyelids. If the cavity is filled with pus or occupied by a tumor, its front wall is no longer transparent, and the bright red spots are not seen. Dr. Heryng said he had noted the presence of this sign in ten cases which he had recently seen; he also observed that the wall became again transparent when the pus had escaped and the cavity was washed out.

SOLANUM CAROLINENSE IN EPILEPSY.

In the *Virginia Medical Monthly*, September, 1889, DR. J. L. NAPIER reports a case of a woman who had suffered from epilepsy most of her life in which the usual remedies had been employed without relief, but who was apparently cured by the administration of a tablespoonful of the tincture of horse-nettle three times daily. Other cases are also referred to, one being a dwarfed child, who had been subject to convulsions all its life, wherein a cure was effected by this remedy; another was the case of a pregnant woman, suffering from convulsions due to albuminuria, in which good results had followed the use of this tincture. The preparation employed was that of a twenty per cent. tincture made from the berries, the dose varying from 10 drops to a drachm. Even larger doses can be given, and, in fact, the writer recommends the administration of the drug to be pushed until physiological effect—drowsiness—is produced.

A METHOD OF ADMINISTERING CHLORAL HYDRATE IN ECLAMPSIA.

BLANC has recently alluded to the difficulty of administering the drug by the mouth to patients in whom consciousness is impaired or lost, and to the drawbacks and uncertainty of its administration subcutaneously or *per rectum*. He then pointed out that with a patient lying on the back it is easy to introduce liquids *via* the nostrils by means of a funnel. Even in deep coma the reflexes continue to act, and, on arriving in the pharynx, the constrictors seize it and convey it to the stomach. This simple plan, however, is not exempt from inconvenience, and the author prefers to use an œsophageal tube, which may be introduced either through the mouth or the nose. The great point is to avoid the ingestion of too concentrated solutions of the drug, which is apt to set up vomiting. 1 part in 30 or 40, he considers, is as strong as it is safe to use. On the whole, he thinks that medical men give too little rather than too much, as a rule, and he approves of the dose being pushed to 4 drachms in the twenty-four hours in severe cases. Moreover, chloral is not to be looked upon as exclusively a remedy in acute attacks, and the author recommends its use as a prophylactic in cases of marked albuminuria associated with pregnancy

in doses of from 40 to 70 grains daily.—*London Medical Recorder*, October 21, 1889.

THE NON-TUBERCULAR AND NON-CARDIAC HÆMOPTYSES OF ELDERLY PERSONS.

Sir Andrew Clark recently read before the Medical Society of London a paper upon the mode of operation and treatment of hæmoptyses occurring in elderly persons when of non-tubercular and non-cardiac origin. From his inquiries into this subject, he formulates his conclusions as follows (*British Medical Journal*, October 26, 1889):

1. That there occurs in elderly persons free from ordinary diseases of the heart and lungs a form of hæmoptysis arising out of minute structural alterations in the terminal blood-vessels of the lung.

2. That these vascular alterations occur in persons of the arthritic diathesis, resemble the vascular alterations found in osteo-arthritic articulations, and are themselves of an arthritic nature.

3. That although sometimes leading to a fatal issue, this variety of hæmoptysis usually subsides without the supervention of any coarse anatomical lesion of the heart or of the lungs.

4. That when present this variety of hemorrhage is aggravated or maintained by the frequent administration of large doses of strong astringents, by the application of ice-bags to the chest, and by an unrestricted indulgence in liquids to allay the thirst which the astringents create.

5. That the treatment which appears at present to be the most successful in this variety of hæmoptysis consists in diet and quiet, in the restricted use of liquids, and the stilling of cough; in calomel and salines; in the use of alkalies with iodide of potassium; and in frequently renewed counter-irritation.

THE ACTION OF SALICYLATE OF SODIUM UPON THE UTERUS.

Dr. M. Wacker has recently published a series of cases in which salicylate of sodium was administered to women either for its anti-rheumatic or antithermic effects, or in metrorrhagia, or for dysmenorrhœa (*Gazette Médicale de Paris*, October 26, 1889). He administered it to two pregnant women, one in the second and the other in the fourth month, in each of whom the daily administration of 45 grains produced abortion; in six lying-in women the administration of salicylate of sodium occasioned metrorrhagia and increased very greatly the flow of blood then existing, and, in fact, in one case led to the production of fatal hemorrhage occurring on the fifth day after delivery. In five other cases salicylate of sodium administered immediately or a little after the menstrual period to calm dysmenorrhœa, produced the return of the menses without relieving the suffering. Nevertheless, in nineteen out of thirty-three cases of dysmenorrhœa, a favorable result was obtained through the administration of the salicylate of sodium. The abortive action of salicylate of sodium appears to be incontestable, and the author attributes it to the great congestion of the uterus which it occasions.

BROMOFORM IN WHOOPING-COUGH.

In a recent number of the Gazette we referred to a communication of Dr. Stepp as to the treatment of whooping-cough with bromoform. In the *Deutsche Medizinische Wochenschrift*, October 31, 1889, Dr. Stepp publishes a second statement on this subject, in which he says that his list of cases so treated amounts to one hundred, and in no single case was there a failure noted. He states, however, that he has found it advisable to change his mode of administration, and now gives the bromoform pure in 1-drop doses in a teaspoonful of water. On account of its high specific gravity the bromoform sinks to the bottom of the spoon and there forms an isolated drop. The teaspoon should then be carried well back into the mouth and its contents rapidly swallowed; by this means all taste is avoided. His adjustment of the dose is as follows: For children 3 to 4 weeks, 1 drop three or four times daily; in older, nursing children, 3 drops, according to the intensity of the attack. In children of from 2 to 4 years of age, 4 to 5 drops three or four times daily; up to 7 years of age, 6 to 7 drops three or four times daily. Dr. Stepp claims as to this mode of treatment that vomiting as an accompaniment was immediately arrested. The attacks also became shorter and appetite rapidly returned, and perfect cure resulted in from two to three weeks. But small quantities of the bromoform should be ordered at a time, as it is very volatile, and it should be protected from light to prevent decomposition. Red bromoform should be rejected, since it is already decomposed and contains free bromine, and is consequently unsuited for administration.

—THE—

Therapeutic Gazette.

Whole Series, Vol. XIV. | DETROIT, MICH., PHILADELPHIA, PA., | February 15, 1890. | Third Series, Vol. VI. No. 2.

CONTENTS.

Original Communications.

PAGE

The Action of Alcohol on Animal Heat Functions. By Edward T. Reichert, M.D. ... 73
Hydrastinine in Uterine Hemorrhage. By Edmund Falk, M.D. ... 86
Gastric Ulcer, with Fibroid Enlargement and Induration of the Pylorus, or Cancer (?). By Chas. M. Mutz, M.D. ... 91
Rhus Toxicodendron. By Chas. Raymond Carpenter, M.D. ... 93

Leading Articles.

Cocillana as an Expectorant ... 96
The Hypnotic Action of Chloralamide ... 97
The Diuretic Action of Theobromine ... 99
Euphrasia Officinalis and the Treatment of Coryza ... 100
On Scopolia Carniolica—A New Source of Hyoscyamine ... 101

Reports on Therapeutic Progress.

Diagnosis of Ovarian Tumors from Uterine Fibroids ... 95
The New Hypnotics ... 102
Influenza Therapeutics ... 106
Picric Acid in the Treatment of Skin-Diseases ... 107
Value of Salicylate of Sodium in Dysmenorrhœa ... 107
A New Antiseptic Dressing ... 108
The Use of Oxygen in the Treatment of Leuchæmia and Grave Anæmias ... 108

PAGE

The Action of Astringents ... 111
Disinfection of Dwellings by Means of Sulphur Dioxide ... 111
Abrus Precatorius ... 113
Hydronaphthol as a Specific in the Treatment of Tinea Tonsurans ... 114
The Local Action of Helleborein ... 114
The Influence of Opium and Morphine on Uric Acid considered with Reference to their Action in Health and Disease ... 115
Treatment of Scarlatinal Nephritis ... 115
The Administration of Certain Drugs by Electricity ... 116
Thiol and Ichthiol ... 117
Menthol in Acute Rhinitis, Influenza, and other Affections of the Nose and Throat ... 117
Cactus Grandiflorus in some Forms of Heart-Disease ... 118
The Action of Lobeline ... 118
Use of Atropine as an Antagonist to Chloroform ... 119
Comparative Action of the Natural and Artificial Salicylic Acids and their Salts of Sodium ... 119
The Treatment of Pharangeal Inflammations by the Internal Administration of Salol ... 120
The Antifermentative Treatment of Infantile Diarrhœa ... 121
Eseridin ... 121
A New Theory of Diabetes ... 122
Pereirine as an Adjuvant to Quinine in Malaria ... 122
The Antisepsis of the Renal Passages by the Internal Use of Salol ... 123
Phenyl Urethan ... 123
The Administration of Preparations of Iodine and Bromine through the Rectum ... 123

PAGE

Yellow Oxide of Mercury Subcutaneously administered ... 124
Treatment of Medical Emergencies ... 124
The Injection Treatment of Acute Gonorrhœa ... 127
Pathology of Duodenitis after Burns ... 128
The Antiseptic Properties of Lime ... 129
Papain in Ear-Diseases ... 129
Tracheal Injections in Pneumonia ... 130
Alum Enemata in Dysentery ... 130
Chloride of Sodium in Facial Neuralgia ... 131
Saccharin in Cystitis ... 131

Reviews ... 132

Correspondence.

Paris Letter ... 135

Notes and Queries.

Incompatibility in Prescriptions ... 137
The Treatment of Influenza ... 139
The Administration of Chloral ... 139
The Effect of Distention of the Abdomen on Circulation and Respiration ... 140
Essence of Winter-Green ... 141
Ammonia in Cocaine-Poisoning ... 141
A New Contribution to the Study of Pneumonia ... 141
Naphthalin and Cataract ... 142
Floods and their Results from a Sanitary Stand-Point ... 143
Standards for Milk Analysis ... 143
The Tenth International Medical Congress ... 143
A New Operation for Displacement of the Uterus ... 143
The Ophthalmic Review ... 144

Original Communications.

THE ACTION OF ALCOHOL ON ANIMAL HEAT FUNCTIONS.

By Edward T. Reichert, M.D.*

THE important position occupied by alcohol in the domain of therapeutics demands an accurate and thorough knowledge of its physiological actions, yet the evidence accumulated through various channels of research or observation is so conflicting that but few of its characteristic properties are definitely and fully known. Doubtless much of this contradictory testimony is attributable to the diverse circumstances under which the studies were made, to imperfect methods, faulty observation and deduction, and, among other probable conditions, a more or less complex action in the production of a given effect, in which several factors may be involved which vary in their relative importance in different cases and thus give rise to results which may even be opposite. Apart from our knowledge of the action of alcohol on bodily temperature its influence on the heat functions is extremely unsatisfactory. The asserted value of this agent as a food, its unquestionable efficacy in febrile and adynamic conditions, its peculiar molecular composition and tendency to undergo oxidation and

* Professor of Physiology, University of Pennsylvania.

yield energy in the form of heat render it of peculiar interest in this respect and suggest the value of accurate information of its effects on the economy.

The study of the action of any agent on thermal processes involves the consideration of its effects on the quantity of heat produced, the quantity dissipated, and on the bodily temperature. Investigators have been led to determine heat production by *indirect* or *direct* calorimetry. Indirectly, it is estimated through a knowledge of the quantities and chemical composition of the substances entering the body as food, and of the effete principles resulting from their oxidation, and from this data computing the amount of heat evolved; or, by regarding temperature changes in the organism as indicating similar alterations in thermogenesis. Directly, the heat formed is measured by means of an instrument specially adapted for direct determination, and hence known as the calorimeter. Practically, all the work done with alcohol has been accomplished by the indirect method, and is accordingly open to many sources of error and is inconclusive. For while there can be no doubt that CO_2, urea, phosphates, and other effete matters arise through destructive tissue metamorphosis, by which heat is formed as the chief result, just what importance any or all of these products possess in indicating the degree, or even the direction, of the activity of the processes concerned in heat production is far from being determined. Desplatz's experiments on rats, guinea-pigs, and small birds, and Senator's on dogs, in which the heat formed was measured by a calorimeter, and the CO_2 by established methods, would lead us to believe that there exists no direct relation between the quantity of heat formed and of CO_2 eliminated; while in connection with urea, which was once looked upon as almost an absolute index of tissue waste, recent experiments show quite clearly that the quantity eliminated is indicative of the amount of nitrogenous food and not of retrograde metamorphosis. Finally, that there is no definite relation between bodily temperature and heat production is clearly evident whenever the two are measured simultaneously for consecutive hours. Until, however, the precise values which these effete matters possess in indicating the nature of the changes in thermogenesis are definitely established, their usefulness in suggesting the probable direction of thermal alterations may be accepted with caution and reserve.

The present experimental opinions of the actions of alcohol on the heat functions being founded on the CO_2 and urea and other salts eliminated, and upon alterations in bodily temperature, we may consider these for convenience and clearness *seriatim*.

Since the chemical processes in the body are essentially those of oxidation, and as the heat evolved is almost wholly due directly or indirectly to such changes, the measure of the amount of oxygen consumed is equally, if not, indeed, more important than that of CO_2 given off. Under normal conditions more oxygen is consumed than represented in the CO_2 eliminated, the relation between them $\frac{CO_2}{O} = .906$, being the "respiratory quotient." The excess of oxygen goes to form other oxidative products, and as the respiratory quotient is subject under certain conditions to marked changes, it is clear that the quantity of CO_2 formed may be far from indicating the quantity of oxygen consumed, and, as a consequence, if considered alone, may give rise to obvious sources of error. The older observers did not realize the importance of measuring the oxygen in connection with their CO_2 estimations, consequently Prout, Vierordt, Böcker, Bernard, Hammond, Smith, Berg, Davis, and others studied only the CO_2 eliminated, and even these calculations are generally, because of various other defects in the method of experiment, of but little intrinsic value. Of the recent investigations, some have taken account only of the O consumed, others of both the O consumed and CO_2 eliminated. Thus, Rumpf asserts, without sufficient grounds, however, that in guinea-pigs in alcohol narcosis the quantity of oxygen consumed is diminished. Henrijean, in experiments on himself, noted an increase. Boeck and Bauer, in a few and unsatisfactory experiments on dogs and cats, found that small doses diminished both the consumption of O and elimination of CO_2, while larger doses, not sufficient to cause narcotism, notably increased both quantities. Experiments on rabbits by Wolfers show that when animals are placed in a bath of constant temperature, O and CO_2 were increased and the respiratory quotient generally lowered. Bodländer, in two dogs, found the consumption of O reduced 11.72 and 19.10 per cent. respectively, and the elimination of CO_2 reduced 10.78 and 19.16 per cent. In a rabbit the alterations were respectively 3.13 and 7.74 per cent., the respiratory quotient not being especially affected. Zuntz and

Berdez, in observations on man, using doses of 20 to 30 c.c., and maintaining complete muscular quiet, noted an increase in both O and CO_2 of 3.5 per cent. Other experiments made by Geppert led him to assert that alcohol, in moderate quantities, had no decided effect on the amount of oxygen consumed, while the quantity of CO_2 eliminated was unaffected or slightly diminished. It will be observed that the evidence regarding the consumption of O and elimination of CO_2 is conflicting. The most carefully performed experiments indicate a diminution of both, but this cannot be considered definitely settled.

The results of observations in connection with the elimination of urea and certain other effete matters found in the urine and fæces are, on the other hand, quite uniform. Thus, Böcker, Fokker, Hammond, Parkes and Wollowicz, Munk, Riess, and Desplatz all affirm that the quantity of urea is diminished, although most of the work is all but valueless, owing to the neglect of the determination of the precise amount of nitrogenous matter entering the body as food, as well as the quantity of water drunk, or because of the periods of experiments being too brief, or for other reasons.

Studies of the action of alcohol on bodily temperature, of both man and animals, under normal and abnormal conditions, are numerous and the results contradictory. The feeling of warmth in the stomach, and afterwards in the skin, after the ingestion of this agent, naturally suggest that it increases temperature, and while we are not without evidence to show that such, under certain circumstances, may be the case, there can be no question, however, that the characteristic action is to produce a distinct diminution. Differences in the results are largely due to variations in the quantity of alcohol taken and upon the attendant circumstances of method or otherwise. But few observers have noted a distinct rise. Lallemand, Perrin, and Duroy state that large doses always cause a primary increase, followed by a diminution. Lichtenfels and Fröhlich, in two experiments on man,—one with four ounces of eight per cent. alcohol and the other with two ounces of seventeen per cent.,—found a primary increase in the former of .5° and in the latter of .32°. In the first, the temperature returned to the normal in forty-five minutes, and in the latter in fifty minutes. Riegel states, as a result of a careful series of experiments, that only exceptionally is an elevation of temperature observed. Riegel's results I have confirmed by twenty-two experiments on dogs, each covering an average of several hours, with doses varying from 1.25 c.c. to 5 c.c. of alcohol per kilo of body weight. In only five did the temperature at any time go above the normal, then only from .1° to .5° C., commonly but .2° or .3°, and generally immediately after the dose. The action of alcohol on temperature in the opposite direction is far better marked and very constant. Tscheschichin, in experiments on rabbits, always noticed a fall. Lallemand and others, in dogs, found a fall following the primary rise. Bouvier, states that in experiments on different animals, small doses diminish temperature not attended by any increase; larger doses diminish to a greater degree; in fever, a similar diminution occurs. Binz, Daub, Parkes and Wollowicz, Ringer and Rickards, Riegel, and others have all noted a diminution more or less marked or even profound; occasionally, however, as in certain of Parkes and Wollowicz's observations, no appreciable change occurred even after doses of from 10 to 20 ounces of claret in man, or from 1 to 6 ounces of brandy.

The careful studies of Riegel, embracing eighty-six experiments on man, lead to conclusions which doubtless closely represent the peculiar actions of alcohol on animal temperature. In his summary he states, among other conclusions, that—1, alcohol, even in moderate doses, in many cases causes a lowering of the temperature, the amount of diminution averaging, as a rule, a few tenths of a degree C.; 2, only exceptionally is an elevation of temperature detected, and not unfrequently after small doses there is no noticeable change; 3, the frequent repetition of doses of alcohol diminishes the lowering effect; 4, the amount of diminution is directly proportional to the dose; 5, the depression for the most part is of short duration. My own experiments on dogs agree in their results with the conclusions of Riegel. The intensity of the action, however, is far from always being in accord with the dose, a given dose in one case producing a profound effect, and in another little or almost none. Illustrations of this may be seen in records of experiments in this paper.

Briefly, the evidence, then, seems to indicate that the quantity of oxygen consumed and CO_2 and other effete matters given off are diminished and the bodily temperature lowered. All these changes being in harmo-

nious relation strongly suggest that alcohol diminishes the normal activity of tissue changes. This finds support in the experiments of Nencki and Sieber, and Simanowsky and Shoumoff, in their studies on the influence of this drug on the oxidation of certain substances injected into the organism when they found the change diminished.

The fact that CO_2 is not increased is one of great practical economic importance, for it must be evident that either this gas does not constitute one of the chief products resulting from the decomposition of alcohol, or else general tissue metamorphosis is so diminished that the quantity of CO_2 eliminated largely represents an alcohol derivative.

That this agent rapidly undergoes chemical change after absorption, that but a small percentage is eliminated as such, and that we do not find either in the system or excreta any immediate oxidation products, is clearly established. What becomes of it and in what form eliminated are unsettled problems. The experiments of Schulinus and Salzynski show that living blood causes about ten per cent. to disappear immediately. The work of Anstie also demonstrates that this substance undergoes rapid alteration. Thus, to a small dog was given an ounce of brandy daily for eleven successive days. On the last day, after receiving the dose, he was killed, quickly chopped up, and the minced tissues extracted for alcohol. But only one-fourth of the drug represented in the last dose of brandy was recovered, while the total quantity eliminated the day before was only 1.13 grains. Dupré noted that but a small percentage of the alcohol taken was excreted as such, this being supported by the earlier and less valuable investigations of Lallemand, Perrin, and Duroy. Parkes and Wollowicz found that practically none was eliminated after twenty-four hours, and Anstie observed that after the ingestion of three or four ounces of alcohol only one or two grains could be found in the urine. Heubach, in experiments on individuals with fever, to which were given doses of from 18 c.c. to 325 c.c., determined, as a result of twenty-two experiments, an elimination in the urine of 1.12 per cent.

That the skin and lungs are not more important than the kidneys in this elimination is evident from the recent work of Bodländer on himself and a dog. On himself, after taking from 50 c.c. to 100 c.c. of absolute alcohol, diluted with from twenty to fifty per cent. of water, the quantity recovered in the urine varied from .17 to 1.86 per cent., or an average of 1.18 per cent. The maximum was recovered during the first hour, a small quantity during the second, and the merest traces during the third. In the dog, after doses of from 20 c.c. to 30 c.c. of absolute alcohol, 1.57 per cent. was recovered in the urine. Through the skin he recovered from himself .14 per cent., and through his lungs 1.6 per cent.; through the dog's lungs 1.95 per cent., but none from the fæces and intestines. The total amount recovered from himself was 2.92 per cent., and from the dog 3.52 per cent. Larger quantities have been recovered by other investigators, as, for instance, by Subbotin in experiments on rabbits in which excessive doses were used, the quantity in such observations amounting to about sixteen per cent. It seems very clear from this work that alcohol, in moderate quantity, rapidly undergoes alteration in the system and that but a small percentage is eliminated as such.

While we do not know the precise nature of this change, there is no reason to believe that a more complex molecule is formed; but, on the other hand, the indication is of a breaking up of the molecule into simpler bodies, such as CO_2 and H_2O. As it is obviously impossible to satisfactorily detect in the excretions such small quantities of H_2O as would thus be formed, we are dependent alone on estimations of CO_2. Here we meet with the formidable indication that the quantity of CO_2 eliminated after alcohol is actually less than normal. This, however, is explicable in the possibility of the drug acting directly upon the heat processes and lessening normal tissue metamorphosis, thus diminishing the amount of the gas arising in this way, and supplying a portion of the deficiency from its own decomposition. That it does diminish destructive tissue change seems supported by the lessening of the amount of nitrogenous and other effete matters, and also by the diminution of the animal's temperature. But this can only satisfactorily be determined by direct measurement of the quantity of heat produced and dissipated.

Alcohol, as is well known, yields an enormous amount of energy in the form of heat during its complete oxidation, one gramme of absolute alcohol setting free nine kilogramme degrees. Should the alcohol thus be oxidized in the body, the heat evolved from a quantity, such as taken by Bodländer (100 c.c.), would equal about seven hundred and fifteen kilogramme degrees, being equivalent to about one-fourth the total approximate heat production of an average man per

diem. The amount of CO_2 formed would be equal to about one hundred and fifty-two grammes, or one-sixth the mean quantity eliminated per diem. That this agent actually does yield energy, or else conserve the tissues, or both, is also evident in its power of sustaining the system in disease, in the increase of body weight often observed in drunkards even on restricted diet, and the known ability of the economy to maintain an equilibrium of metabolism on limited food. Should alcohol thus yield energy it is obvious that the total output of heat must be increased or less tissue change occur to compensate for it. Calorimetrical experiments alone can determine this, and the only observations of the kind recorded are those of Bevan Lewis (*Journal of Mental Science*, 1880–81, p. 20), Wood and Reichert (*Journal of Physiology*, iii. p. 321), and Desplatz (*Maly's Jahresberichte ü. d. Fortschritte der Thierchemie*, 1886, s. 365). The experiments of Bevan Lewis were performed on rabbits with a calorimeter such as described by Burdon-Sanderson but somewhat modified. The observations were made during quarter-hour intervals and commonly for six consecutive periods. From a number of experiments, only a few of which are given, he reaches the following conclusions:

1. A primary check to heat formation is most marked and protracted when small doses of alcohol are given.

2. A pronounced fall of body temperature is most marked during the first quarter hour and coincident with the primary *check* to thermogenesis.

3. A secondary greatly increased heat production varies directly with the dose.

4. The increased heat production is manifested over a more prolonged period after larger doses.

5. The increase of heat production is gradually augmented from time to time until the heat climax is reached, a period usually coincident with the registry of the *lowest* bodily temperature.

6. The heat climax is more protracted or postponed and is greater in degree with larger doses of alcohol.

7. The greatest loss of heat units from temperature (diminution of temperature) occurs during the first interval, subsequent intervals being marked by a still progressive loss, which, however, becomes less towards the period of heat climax, when a restitution to the normal of temperature begins.

8. With small doses of alcohol this restitution of bodily temperature is usually sudden or comparatively rapid in operation; after larger doses the return to normal temperature is spread out over a longer period, being extremely tardy when very large doses are administered.

9. The characteristic action of alcohol is that of greatly increasing the heat production, while a dispersion of fresh formed heat is facilitated by peripheral vaso-motor paresis, and that only in very small doses we get a temporary lowering of the heat functions.

In the experiments of Wood and myself on dogs five observations were made with different doses, and with results in accord generally with Bevan Lewis's, inasmuch as on the whole heat production and dissipation were both increased. Our experiments were conducted differently, the normal production and dissipation being studied for one period of from one to two and a half hours, then the alcohol given, and a second observation made for a similar length of time. These results are here tabulated:

No. of experiment.	Duration (hours).	Weight of animal (pounds).	Dose (grains)	Hourly dissipation of heat.				Hourly production of heat.			
				Normal.	After drug.	Increase.	Per cent. increase.	Normal.	After drug.	Increase.	Per cent. increase.
1	2½	14.75	℥l (3.3)*	80.6414	88.0207	7.3793	9 1	78.7509	87.0251	8.2742	10 5
2	1½	13	ʒii (70)†	101.9647	146.1720	44.2073	33.5	77.9220	101.9647	24.0427	30.8
3	1½	22	ʒiiss (60)‡	155.8239	174.8450	19.0211	12.2	133.2650	155.2859	22.0209	16.5
4	2	22	ʒi (22)§	138 4432	182 0656	43.6224	31.5	138.4432	173.5816	37.1384	26.8
5	1	18 (?)	ʒss (27)‖	88.26	89.6321	1.3721	1.5	72.1361	96.03	23 8939	31.4
						Average =	17.6			Average =	23.2

* Dose in parenthesis in grains per pound of body-weight.
† By the stomach (eighty per cent. alcohol).
‡ By the stomach, ʒi; subcutaneously, ʒiss (ninety per cent. alcohol).
§ By the stomach (eighty per cent. alcohol).
‖ Hypodermically (ninety-five per cent. alcohol).

Desplatz made four half-hourly experiments on rats, and in each found a diminution in heat dissipation and of CO_2 and nitrogen eliminated.

In Lewis's experiments a check to heat formation was detected during the first quarter hour; following this the increase was decided. Thus, after moderate doses, in an animal in which the normal production per kilo was .95 gramme-units, during the first interval after alcohol it was .46 gramme-units, during the second 2.7, the third 1.3, and the fourth 1.5 units, the increase after the first interval being nearly threefold. The mean heat production following alcohol was more than normal,—viz., equal to 1.49 units. Our own experiments cover hours; hence we obtain mean figures for the periods during which Lewis made observations for short intervals. Therefore, if a primary check commonly occur, it is lost in the relatively larger heat production following. As a consequence, the mean in our experiments always shows an increase. Lewis always noted a diminution of temperature, dependent, of course, upon the excess of dissipation over production. In our experiments similar results were obtained in two, while in the other three production was in excess, with a consequent rise of bodily temperature. The doses varied within wide limits, but no relation is evident between these differences and the varying results. In Lewis's experiments the temperature curve diminished from the first, showing that heat dissipation was always in excess of heat production. Curiously, the greatest depression of temperature occurred coincidently with the greatest heat production. The results of the experiments of Bevan Lewis, and Wood and myself on heat production are contradicted by those of Desplatz and the evidence indicating a diminution in the amount of tissue metamorphosis.

Whether a drug affects primarily the process of dissipation or that of production must perhaps always remain a matter of speculation. It seems fair to infer that when heat production is changed more than dissipation, in either direction, whether increased or decreased to a greater extent, the former would be the part of the mechanism primarily affected, and that the alteration occurring in the latter would be in the way of compensation to prevent undue increase or diminution of the animal's temperature. With alcohol Lewis always found an excess of dissipation, while in only two of our five experiments was this noted. The indication here would be that the function of dissipation is the one primarily affected, and that the increase of production was to make up for this excessive loss. This is certainly not without support in the belief that this agent causes peripheral vaso-motor dilatation, and thus facilitates the loss of heat. The increase of thermogenesis, on the other hand, is certainly not in accord with what we would be led to expect from studies made in the elimination of CO_2, urea, etc. Apart from this inconsistency, there are ample reasons why, in the premises, both the experiments of Lewis, Wood and myself, and Desplatz are of questionable value. Our own experiments are certainly too few and inconclusive, while those of Lewis lose much of their weight in the fact that the accurate working of his instrument is open to suspicion, for during some intervals absolutely no heat was shown by the calorimeter, although, as is obvious, the animal must have radiated an appreciable quantity. In Desplatz's experiments the heat dissipation only was recorded.

Thus the absence of accurate and satisfactory knowledge of the actions of alcohol on the animal heat functions, of the successive phases of its influence during consecutive hours, together with the value of such data to the therapeutist and dietician, prompted the present inquiry. These experiments were performed by the aid of a new and improved calorimeter (*University Medical Magazine*, January, 1890), which, by rigid testing, was proven an instrument of precision. Dogs were always used. During the first hour the animals were studied without any drug and the result taken to represent a normal standard, although an uncertain one, since the heat processes are subject to considerable variation from hour to hour. Following this normal hour the alcohol was given and the animal subjected to study for from five to six consecutive hours. Since the normal standard thus obtained is of doubtful value as an accurate mean of heat production, it is sometimes too low or too high. Such errors are eliminated by a frequent repetition of the experiments.

Three series of experiments were made. In one commercial alcohol (sp. gr. .835) was given by the stomach, and in a second hypodermically. In the third series absolute alcohol was used to eliminate effects which might possibly be dependent upon foreign substances, like fusel oil, in the former. The doses employed were always in direct relation to the body weight, being in proportion

of 1.25 c.c., 2.5 c.c., and 5 c.c. per kilo. Such quantities seem large because representing enormous doses in man, yet they are never toxic in the dog. It is rare after doses of even 2.5 c.c. per kilo that any marked evidences of intoxication are present. If so, the maximum effect is manifest during the first and second hours. After doses of 5 c.c. per kilo, alcoholism is decided. The phenomena are usually marked during the first hour, then commonly increased a little, and gradually fade away noticeably during the progress of the experiment, but at times they grow more and more pronounced. This dose is, however, far from being a fatal one, which is perhaps about 8 or 10 c c. per kilo of absolute alcohol. With the largest doses vomiting sometimes occurs, and when hypodermically injected local abscesses commonly followed.

The prominent features in these records are the fluctuations in heat production and heat dissipation occurring from hour to hour, the general tendency to a diminution of heat production and relative excess of heat dissipation, and the generally downward and progressive fall of the animal's temperature. While the variations from hour to hour in production and dissipation are quite noticeable, they are, as a whole, no greater than is common in normal animals. The peculiar actions of the drug are, therefore, manifest in the prevailing direction of the changes in these functions and their relation to each other, by which the bodily temperature becomes altered. For the convenience and facility of study, the main incidents in the records of the different series will be considered *seriatim*, examining first the first and second series, in which commercial alcohol was used, then the third series, with absolute alcohol.

In the first series commercial alcohol was given by the stomach, diluted with from three to four parts of water, and warmed to about the temperature of the body. In Experiment 1 the dose was 1.25 c.c. per kilo. The quantity of heat produced was above the normal standard during the entire experiment, the most marked increase being observed during the first hour. Heat dissipation, on the other hand, was below the standard throughout the experiment, with the result of increasing the animal's temperature. In Experiments 2, 3, 4, and 5 the dose was double, or 2.5 c.c. per kilo. In Experiment 2 heat production during the first hour was increased, and even to a greater extent during the second hour; a fall then occurred, reaching the normal, followed by a further diminution, and this by a rise. The mean quantity of heat produced per hour during the experiment was greater than normal. Heat dissipation was less than normal, excepting during the first hour, but, as a whole, in excess of heat production; hence the animal's temperature was always subnormal. In Experiment 3 both heat production and dissipation were, on the whole, increased, and were always above the normal, save heat production during the first and last hours, when it was a little less. Dissipation was, on an average, greater than production, and the animal's temperature was lowered. In Experiment 4 both heat production and dissipation were decidedly diminished; the former was, however, in excess, excepting during the first and last hours, when the same. The temperature was always normal or above it. In Experiment 5, in which the dose was 5 c.c. per kilo, production was always less than normal, also dissipation, excepting during the first hour, when but a trifle above. Dissipation generally was in excess of production, and, as a result, temperature was reduced. In Experiment 6, with a similar dose, production was notably decreased during the first hour, went above normal during the second, and declined to far below normal during the subsequent periods. Dissipation was always subnormal, except during the first hour, and, with the exception of the second and fifth hour, in excess, and, as an average, greater, so that a distinct reduction of bodily temperature occurred.

In the second series similar doses were given, but administered hypodermically. In such experiments we would naturally expect a more prompt and energetic action, and perhaps some slight modifications in the general characters of the curves, owing to the more rapid absorption into the blood, and perhaps to the absence of direct effects of alcohol on the peripheries of the pneumogastric nerves when given by the former method. The curves, as a rule, certainly do not exhibit such decided fluctuations, while the relations between the processes of production and dissipation are appreciably more constant, the result being a diminution of temperature in all experiments during the entire observation, excepting during the third hour in Experiment 7 and the first hour in Experiment 10, when it was normal, and the fourth, fifth, and sixth hours in Experiment 7, when it went some tenths above.

FIRST SERIES.—*Commercial Alcohol, Sp. Gr. .835, by the Stomach.*

Experiment 1.—Dog; weight, 10.65 kilos; dose, 1.25 c.c. per kilo.

	Hourly heat production.	Hourly heat dissipation.	Rectal temperature.			Average room temperature during hour.
			Beginning of hour.	Ending of hour.	Gain or loss (+ or —).	
Before alcohol	19.017	25.833	38 9°	38.1°	—.8°	15.90°
First hour after alcohol	25.852	25.000	38.1°	38.2°	+.1°	16.25°
Second hour after alcohol	21.685	20.833	38.2°	38.3°	+.1°	17.15°
Third hour after alcohol	22.916	22 916	38.3°	38.3°	±.0°	17.65°
Fourth hour after alcohol	23.768	22.916	38.3°	38.4°	+.1°	18.70°
Fifth hour after alcohol	23.750	23.750	38 4°	38.4°	±.0°	19.30°
Sixth hour after alcohol	22.234	21.382	38.4°	38.5°	+.1°	17.90°

Experiment 2.—Dog; weight, 6.75 kilos; dose, 2.5 c.c. per kilo.

Before alcohol	13.056	17.916	39.9°	39.0°	—.9°	17.10°
First hour after alcohol	14.430	18.750	39.0°	38.2°	—.8°	17.10°
Second hour after alcohol	20.200	17.500	38 2°	38.7°	+.5°	17.40°
Third hour after alcohol	12.963	14.583	38.7°	38.4°	—.3°	17.55°
Fourth hour after alcohol	16.654	15.546	38.4°	38.6°	+.2°	17.80°
Fifth hour after alcohol	12.376	12.916	38.6°	38.5°	—.1°	18 05°
Sixth hour after alcohol	13.873	13.333	38.5°	38.6°	+.1°	18.20°

Experiment 3.—Dog; weight, 10 7 kilos; dose, 2.5 c.c. per kilo.

Before alcohol	19.768	19.250	38 10°	38.15°	+.05°	16.85°
First hour after alcohol	17.083	20.916	38.15°	37.70°	—.45°	18.20°
Second hour after alcohol	23.810	24.666	37.70°	37.60°	—.10°	18.15°
Third hour after alcohol	26.852	23.000	37.60°	38.05°	+.45°	18.25°
Fourth hour after alcohol	19.222	20.500	38.05°	37.90°	—.15°	18.20°
Fifth hour after alcohol	23.022	22.166	37.90°	38.00°	+.10°	18.80°
Sixth hour after alcohol	18 810	19.666	38.00°	37.90°	—.10°	18.40°

Experiment 4.—Dog; weight, 10 kilos; dose, 2.5 c.c. per kilo.

Before alcohol	36.983	34.583	38.25°	38.55°	+.30°	20.10°
First hour after alcohol	33.333	33.333	38.55°	38.55°	±.00°	20.00°
Second hour after alcohol	30.080	30.000	38.55°	38.56°	+.01°	19.80°
Third hour after alcohol	24.210	23.750	38.56°	38.63°	+.07°	19.70°
Fourth hour after alcohol	30.300	27.500	38.63°	38.98°	+.35°	19.80°
Fifth hour after alcohol	21.393	20.833	38.98°	39.05°	+.07°	20.00°
Sixth hour after alcohol	20.833	20.833	39.05°	39.05°	±.00°	19.80°

Experiment 5.—Dog; weight, 7 03 kilos; dose, 2.5 c.c. per kilo.

Before alcohol	16.104	16.666	38.35°	38.25°	—.10°	20 78°
First hour after alcohol	13.395	17.500	38.25°	37.52°	—.73°	20.65°
Second hour after alcohol	13.856	16.666	37.52°	37.02°	—.50°	21.00°
Third hour after alcohol	14.073	12.500	37 02°	37.30°	+.28°	21.10°
Fourth hour after alcohol	12.738	13 750	37.30°	37 12°	—.18°	20.70°
Fifth hour after alcohol	11.709	10.416	37.12°	37.35°	+.23°	20.85°
Sixth hour after alcohol	13.512	12.500	37.35°	37.53°	—.18°	21.10°

Experiment 6.—Dog; weight, 7.25 kilos; dose, 5 c.c. per kilo.

Before alcohol	25.090	26.250	39.60°	39.40°	—.20°	20.10°
First hour after alcohol	19.543	27.083	39.40°	38.10°	—.30°	19.90°
Second hour after alcohol	26.486	24.166	38.10°	38 50°	+.40°	19.75°
Third hour after alcohol	19.020	22.500	38.50°	37.90°	—.60°	20.00°
Fourth hour after alcohol	17.063	20 833	37.90°	37.25°	—.65°	20.30°
Fifth hour after alcohol	17.916	17.916	37.25°	37.25°	±.co°	18.80°
Sixth hour after alcohol	13.698	14.443	37.25°	37.10°	—.15°	18.80°

SECOND SERIES.—*Commercial Alcohol, Sp. Gr. .835, injected Hypodermically.*

Experiment 7.—Dog; weight, 7.71 kilos; dose, 1.25 c.c. per kilo.

	Hourly heat production.	Hourly heat dissipation.	Rectal temperature.			Average room temperature during hour.
			Beginning of hour.	Ending of hour.	Gain or loss (+ or —).	
Before alcohol	21.575	22.500	39.05°	38.90°	—.15°	20.25°
First hour after alcohol	21.467	22 083	38.90°	38.80°	—.10°	20.80°
Second hour after alcohol	20.217	20.833	38.80°	38.70°	—.10°	19.65°
Third hour after alcohol	21.232	20.000	38 70°	38.90°	+.20°	19.73°
Fourth hour after alcohol	21.032	20 416	38.90°	39.00°	+.10°	20.05°
Fifth hour after alcohol	21.141	20.833	39.00°	39 05°	+.05°	20.50°
Sixth hour after alcohol	19.474	19.166	39.05°	39 10°	+.05°	20.37°

Experiment 8.—Dog; weight, 8 61 kilos; dose, 2.5 c.c. per kilo.

Before alcohol	21.66	20.29	39.20°	39.00°	—.20°	16.70°
First hour after alcohol	17.88	19.95	39 00°	38.70°	—.30°	17.27°
Second hour after alcohol	18.43	19.81	38.70°	38.50°	—.20°	18.00°
Third hour after alcohol	16 80	17.49	38.50°	38.40°	—.10°	18.70°
Fourth hour after alcohol	16.66	16.66	38 40°	38.40°	±.00°	19.13°
Fifth hour after alcohol	14.10	15.83	38 40°	38.15°	—.25°	19.40°
Sixth hour after alcohol	15.05	16.78	38.15°	37 90°	—.25°	18.60°

Experiment 9.—Dog; weight, 7.71 kilos; dose, 2.5 c.c. per kilo.

Before alcohol	21.666	21.666	39 20°	39.20°	±.00°	17.10°
First hour after alcohol	18.720	20 000	39.20°	39 00°	—.20°	17.80°
Second hour after alcohol	17.633	20.833	39.00°	38.50°	—.50°	17.75°
Third hour after alcohol	16.220	17.500	38.50°	38.30°	—.20°	17.70°
Fourth hour after alcohol	16.666	16.666	38.30°	38.30°	±.00°	17.80°
Fifth hour after alcohol	16.793	15.833	38.30°	38.45°	+.15°	18.45°
Sixth hour after alcohol	16.256	15.986	38.45°	38.49°	+.04°	17.15°

Experiment 10.—Dog; weight, 11 kilos; dose, 5 c.c. per kilo.

Before alcohol	21 680	25.000	39 05°	38.90°	—.15°	19.33°
First hour after alcohol	27.916	27.916	38.90°	38.90°	±.00°	18.77°
Second hour after alcohol	21.156	22.916	38.90°	38.70°	—.20°	18.90°
Third hour after alcohol	20.276	22.916	38.70°	38.40°	—.30°	18.87°
Fourth hour after alcohol	16 850	21.250	38.40°	37.90°	—.50°	19.23°
Fifth hour after alcohol	20.786	21.666	37.90°	37.80°	—.10°	19.20°
Sixth hour after alcohol	16.666	16.666	38 80°	38.80°	±.00°	19.50°

Experiment 11.—Dog; weight, 8.617 kilos; dose, 5 c.c. per kilo.

Before alcohol	18.914	21.666	39.30°	38.90°	—.40°	16.75°
First hour after alcohol	20.489	20.833	38.90°	38.85°	—.05°	17.00°
Second hour after alcohol	16.831	19.583	38.85°	38.35°	—.50°	16.90°
Third hour after alcohol	17.374	18.750	38.35°	38.10°	—.25°	16.95°
Fourth hour after alcohol	19.031	18.333	38.10°	38.20°	+.10°	16.95°
Fifth hour after alcohol	16.124	17.500	38.20°	38.00°	—.20°	17.15°

Experiment 12.—Dog; weight, 7.94 kilos; dose, 5 c.c. per kilo.

Before alcohol	23.076	19.583	38.90°	39.45°	+.55°	16.60°
First hour after alcohol	21.718	23.750	39.45°	39.13°	—.32°	16.65°
Second hour after alcohol	17.429	21.250	39.13°	38.53°	—.60°	16.45°
Third hour after alcohol	16 676	17.916	38.53°	38.33°	—.20°	17.00°
Fourth hour after alcohol	17.083	17.083	38.33°	38.33°	±.00°	16.80°
Fifth hour after alcohol	15.008	15.833	38.33°	38.20°	—.13°	16.80°
Sixth hour after alcohol	17.618	16.666	38.20°	38.35°	+.15°	17.65°

THIRD SERIES.—*Squibb's Absolute Alcohol, given by the Stomach, diluted with from Fifty to Seventy-five Per Cent. of Water.*

Experiment 13.—Dog; weight, 12.813 kilos; dose, 2.5 c.c. per kilo.

	Hourly heat production.	Hourly heat dissipation.	Rectal temperature.			Average room temperature during hour.
			Beginning of hour.	Ending of hour.	Gain or loss (+ or —).	
Before alcohol	23.542	24.875	38.58°	38.45°	—.13°	21 13°
First hour after alcohol	20.690	24.278	38.45°	38.10°	—.35°	21.26°
Second hour after alcohol	16.813	22.963	38.10°	37.50°	—.60°	21.39°
Third hour after alcohol	20.423	20.833	37.50°	37.46°	—.04°	21 76°
Fourth hour after alcohol	21.687	19.022	37.46°	37.70°	+.26°	21.80°
Fifth hour after alcohol	21.051	19.001	37.70°	37.90°	+.20°	21.46°

Experiment 14.—Dog; weight, 6.349 kilos; dose, 2.5 c.c. per kilo.

Before alcohol	8.586	12.040	39.22°	38.90°	—.68°	20.50°
First hour after alcohol	9.622	12.316	38.90°	38.35°	—.55°	21.40°
Second hour after alcohol	7.793	10.587	38.35°	37.80°	—.55°	21.45°
Third hour after alcohol	9.045	9.553	37.80°	37.70°	—.10°	22.80°
Fourth hour after alcohol	10.284	10.030	37.70°	37.75°	+.05°	22.60°
Fifth hour after alcohol	13.060	12.806	37.75°	37.80°	+.05°	22.72°

Experiment 15.—Dog; weight, 10.204 kilos; dose, 2.5 c.c. per kilo.

Before alcohol	17.527	20.700	38.60°	38.15°	—.45°	23.10°
First hour after alcohol	21.375	20.559	38.15°	38.25°	+.10°	23.45°
Second hour after alcohol	13.656	19.768	38.25°	37.50°	—.75°	23.25°
Third hour after alcohol	15.012	15.828	37.50°	37 40°	—.10°	23.60°
Fourth hour after alcohol	14.369	12.737	37.40°	37.60°	+.20°	23.60°
Fifth hour after alcohol	14.450	12.818	37.60°	37.80°	+.20°	23.36°

Experiment 16.—Dog; weight, 7.029 kilos; dose, 2.5 c.c. per kilo.

Before alcohol	13.232	13.513	38.55°	38.50°	—.05°	21.95°
First hour after alcohol	11.506	15.161	38.50°	37 85°	—.65°	22.32°
Second hour after alcohol	15.589	14.746	37.85°	38.00°	+.15°	22.29°
Third hour after alcohol	11.646	12.208	38.00°	37.90°	—.10°	23.27°
Fourth hour after alcohol	12.664	12.383	37.90°	37.95°	+.05°	23.22°
Fifth hour after alcohol	13.194	12.632	37.95°	38.05°	+.10°	24.49°

Experiment 17.—Dog; weight, 5.9 kilos; dose, 5 c.c. per kilo.

Before alcohol	10.733	14.131	39.45°	38.73°	—.72°	22.63°
First hour after alcohol	9.149	12.123	38.73°	37.90°	—.63°	22.70°
Second hour after alcohol	6.757	9.589	37.90°	37.30°	—.60°	22.96°
Third hour after alcohol	3.834	5.250	37.30°	37.00°	—.30°	23.25°
Fourth hour after alcohol	1.590	3.950	37.00°	36.50°	—.50°	24.45°
Fifth hour after alcohol	5.812	5.340	36.50°	36.60°	+.10°	25.06°

Experiment 18.—Dog; weight, 11.111 kilos; dose, 5 c.c. per kilo.

Before alcohol	15.215	19.215	38.95°	38.50°	—.45°	20.34°
First hour after alcohol	23.167	27.167	38.50°	38.05°	—.45°	20.60°
Second hour after alcohol	10.654	14.210	38.05°	37.65°	—.40°	21.50°
Third hour after alcohol	15.125	14.681	37.65°	37.70°	+.05°	23 69°
Fourth hour after alcohol	14.914	13.852	37.70°	37.85°	+.15°	22.92°
Fifth hour after alcohol	15.915	14.137	37.85°	37.05°	+.20°	23.54°

In all of the experiments in the second series production was subnormal throughout, with the exception of the first hour in Experiment 10 and the first and fourth hours in Experiment 11. Dissipation was always subnormal, excepting during the first hours in Experiments 10 and 12. With the exception of Experiment 7, the mean heat dissipation was

greater than production, with the result of a lowering of the animal's temperature.

In the third series, in which Squibb's absolute alcohol was given diluted by the stomach, we do not find any notable differences from the records in the first series, with which they are more consistently compared. Experiments 13, 14, 15, and 16 were performed with doses of 2.5 c.c. per kilo. In Experiment 13 heat production was always less than normal, notably so during the first and second hours. Heat dissipation, while less than normal, was in excess of production during the first, second, and third hours, and less during the fourth and fifth; but, as a mean, greater, so that temperature was less than normal. In Experiment 14 the variations in heat production were little, but tend above normal, for only during the second hour was it less. Dissipation was above normal during the first and sixth hours, and, with the exception of the fifth and sixth hours, less than production. The excess of dissipation over production was so marked that a decided fall in the bodily temperature occurred. In Experiment 15 both production and dissipation were subnormal, excepting the former during the first hour, when an increase was observed. Dissipation was in excess of production, excepting during the fourth and fifth hours, and on the whole, much in excess, with a consequent diminution in temperature. In Experiment 16 but little action was manifest. The mean production and dissipation not much altered; dissipation, on the whole, was in excess of production, causing a fall of temperature. In Experiments 17 and 18, in which 5 c.c. per kilo were given, we have illustrations of curious differences, which demonstrate the uncertainties of similar doses under apparently the same conditions. In Experiment 17 both production and dissipation were always subnormal, with dissipation always notably in excess, excepting during the last hour, when it was slightly less. Owing to this difference, the animal's temperature underwent a marked and progressive diminution until the last hour, when a slight change occurred in the direction of the normal. In the last experiment both heat production and dissipation were decidedly increased during the first hour, both fell below the normal during the second hour, heat production going slightly above during the third hour, and remaining near the normal subsequently, while heat dissipation during these hours remained below normal. Dissipation, as a whole, being in excess of production, a fall of temperature occurred, which continued throughout.

It is evident that the predominant feature in all these experiments, with the exception of Experiments 1 and 4, is the excess of mean heat dissipation over mean heat production, and, as a consequence, with the production of a diminution of bodily temperature. In only the two experiments alluded to was the mean production in excess, with the result of an increased temperature throughout. In but two other experiments—7 and 15—was a rise of temperature above normal observed at any time during the period of observation, in Experiment 7 there being an increase of .2° during the third, fourth, fifth, and sixth hours, and in Experiment 15 an increase of .1° during the first hour.

As a second feature, it will be observed that in all the experiments, with the exception of Experiments 3 and 18, the mean heat dissipation was subnormal. In Experiment 3 production was also above normal, although less increased than dissipation, while in Experiment 18 the difference is of a similar nature, but somewhat greater, and, as a result, a more decided diminution of temperature.

A third feature and scarcely less marked is the distinct lessening of the amount of heat produced, which, however, is not as constant, and is noted in thirteen of the eighteen experiments. The mean* per cent. change in one direction or the other is presented in the following table:

Number of experiment.	Dose per kilo.	Per cent. mean gain (+) or loss (−) in heat production.	Maximum gain (+) or loss (−) in rectal temperature.
1.....	1.25	+ 22.8	+ 0.40°
2.....	2.50	+ 15.6	— 0.80°
3.....	2.50	+ 8.6	— 0.55°
14.....	2.50	+ 16.0	— 1.20°
18.....	5.00	+ 4.9	— 0.85°
4.....	2.50	— 27.9	+ 0.55°
5.....	2.50	— 17.9	— 1.23°
6.	5.00	— 24.5	— 2.30°
7.....	1.25	— 3.8	— 0.20°†
8.....	2.50	— 23.9	— 1.10°
9.....	2.50	— 27.1	— 0.70°
10.....	5.00	— 5.2	— 1.10°
11.....	5.00	— 4.9	— 0.90°
12.....	5.00	— 23.8	— 1.25°
13.....	2.50	— 14.5	— 0.99°
15.....	2.50	— 11.2	— 0.75°
16.....	2.50	— 2.4	— 0.60°
17.....	5.00	— 42.7	— 2.23°

* This is obtained by finding the total heat production after giving the alcohol, and determining the hourly averages.

† Followed by a rise of .2° above the normal.

This diminution of heat production is altogether fallacious, as far as any direct action of alcohol is concerned, since it, as a whole, is practically no more than that which occurs in normal animals under similar conditions. In nine experiments on normal animals during six consecutive hours, at the same time of day, the average heat production during the first hour was 26.130 kilogramme degrees, a steady decline was observed, and at the sixth hour the average production was 20.614 units. In the thirteen alcohol experiments the mean heat production during the first hour was 20.907 units, a similar steady decline was observed, and at the sixth hour (fifth after alcohol) but 16.117 units were produced. In normal animals the diminution was 21.1 per cent., and in the alcohol experiments 22.9 per cent. The difference is so trifling, and as likely due to accidental causes as to the drug, that we may safely conclude that alcohol is without specific action on thermogenesis, at least so far as any is apparent in the actual quantity produced. In normal animals occasionally an increase of production is observed. This, doubtless, is a partial explanation of the cause of increased production in some of the experiments.

In the fourth column of the table will be found the maximum alterations in the temperature of the animal. It will be noticed that in only three of the experiments—1, 4, and 7—was the temperature at any time above the normal. In Experiment 1 it was always above normal; in Experiment 4 about normal during the first two hours, then going above; and in Experiment 7 fell .2° during the first two hours, then passed .2° above normal, reaching this point at the end of the sixth hour. A matter of great importance is the fact that in only one of the five experiments in which heat production was *increased* was there a *rise* of temperature, while in the other four a diminution occurred, ranging in the four experiments from .55° to 1.20°. In the thirteen experiments in which heat production was diminished, a diminution of temperature was always noted, excepting in Experiment 4, where it was normal or hypernormal, and Experiment 7, where it was subnormal during the first two hours, afterwards normal or above it. The uncertainty of temperature alterations indicating the condition of activity of thermogenesis is apparent by a comparison of the changes in heat production and temperature in this table or in the records.

The diminution of temperature is usually well marked although the effect of a given dose varies within wide limits. The larger the dose, however, the greater the probability of a more pronounced effect. In the two experiments in which the dose was 1.25 c.c. per kilo, in one an increase occurred of .4°, and in the other a decrease of .2°, followed by a similar increase. In ten experiments where the dose was 2.5 c.c., in eight by the stomach and two hypodermically, in one a rise occurred equal to .55°, in the others a maximum diminution of .8°, .55°, 1.20°, 1.23°, 1.10°, .70°. .99°, .75°, and .60°, respectively, or an average of .88°. In six experiments, with doses of 5 c.c. per kilo, in three by the stomach and three hypodermically, the diminution was .85°, 2 30°, 1.10°, .90°, 1.21°, and 2.23°, respectively, or an average of 1.44°. The maximum diminution in one experiment occurred during the first hour, in four during the second hour, in five during the third, in four during the fifth, and in two during the sixth.* The dose obviously has an influence on the time of occurrence of the maximal diminution. Leaving out the three experiments where an increase of temperature was noted, or the smallest dose used, in eight experiments where the dose was 2.5 c.c., the mean time of greatest diminution is two and three-quarters hours, and in seven experiments where the dose was 5 c.c. the mean time is three and sixth-sevenths hours. The effects, therefore, of larger doses, as a whole, are more prolonged and pronounced.

In normal animals a composite curve of rectal temperature records shows that a steady decline occurs, most marked during the first three hours, reaching its maximum during the fifth hour, and equal to .35°. A similar curve constructed from alcohol records shows that the greatest diminution occurs during the third hour (second after alcohol), equal to 1.19°; a rise (.39°) then occurs and the temperature remains about the same to the sixth hour of the experiment. In normal experiments the diminution from the first to the third hour was .24°, so that the difference between .24° and 1.19° = .95° represents the actual alteration produced by the alcohol for a mean dose of 3 2 c.c. per kilo.

It seems accordingly clearly established from these records that the characteristic action of alcohol on the animal heat functions is to cause relative to heat production an excess of heat dissipation and thus lower bodily temperature. Why in certain experi-

* Only eleven of the eighteen experiments were carried out for six hours.

ments the reverse of this should occur is yet to be determined. Doubtless the explanation is to be found in a complex action of the drug on the processes concerned in, or closely related to, the heat mechanism and thus affecting it. First, it is obvious that there is a reciprocal relation existing between the functions of heat production and heat dissipation, so that a primary alteration in one will induce a sympathetic change in the other; accordingly if heat dissipation is unduly increased, as when we are exposed to cold, heat production becomes also increased to make up for the excessive loss; or, should heat dissipation be diminished, heat production would tend to be similarly affected to prevent unnecessary loss of energy or an abnormal increase in bodily temperature. Therefore all conditions which primarily affect the quantity of heat dissipated will affect indirectly the activity of thermogenesis. Second, it seems to be an established fact that alcohol causes a dilatation of the cutaneous capillaries, accordingly the amount of blood exposed to the cooling influences of the surroundings is increased, and, as a consequence, heat dissipation facilitated. Therefore alcohol would thus tend to increase heat dissipation, and, since dissipation is increased, it is obvious that the effect of this would be indirectly to increase thermogenesis to make up for the greater loss. In fact, however, when animals are subjected in the calorimeter to such studies, the characteristic effect is to diminish heat production. It will thus be observed that we have here two opposing factors affecting heat production, one indirectly tending to increase it through vaso-motor alterations, and the other to decrease it, probably through direct action on thermogenic centres. Hence, whether or not in any given case heat production would be increased or diminished, or what the relation of heat production and heat dissipation would be, would depend, other things being equal, to the relative values and relations of these two factors. Added to these is undoubtedly a third factor, which further complicates the action. There can be no doubt that alcohol undergoes decided molecular alterations on entering the blood. The fact that about ten per cent. or more almost instantly disappears in the living blood, that but a very small percentage is eliminated as such, and that but traces exist even after large doses after the lapse of twenty-four hours, all point conclusively in this direction. While it is admitted that we do not know the exact changes which occur in this substance, it is opposed to all knowledge of the chemical processes in the animal organism to suppose that the molecule is rendered more complex; while, on the other hand, there is reason to believe that it undergoes destructive changes through oxidation, yielding simple products, such as CO_2 and H_2O, and energy in the form of heat. Since each gramme of alcohol yields about nine kilogramme degrees, the amount of heat evolved from a moderate dose, as already shown, may be considerable. Consequently, the rapidity with which heat would thus be generated may be a matter of great moment in affecting the thermal output during a given period of time. Hence it follows that even though certain conditions connected with the method of experiment generally tend to diminish heat production nearly one-fifth, yet the number of heat units arising from the probable oxidation of the drug might more than compensate for such a loss. Added to this there may be a temporary increase in the quantity of heat formed as a result of the continued fluctuations in the activity of thermogenesis under normal conditions. Moreover, while the quantity of heat formed after the ingestion of alcohol is practically unaltered, yet the tissue change may be actually diminished, as is indicated in the probable lessening in the amounts of CO_2, urea, and other effete matters eliminated, the lack of heat thus resulting being made up by the destruction of the alcohol with the formation of new and unknown derivatives. Consequently, the study of the action of alcohol on animal heat functions is, doubtless, one of great complexity, in which we have, as important factors, the effects produced by and inseparable from calorimetrical methods or other associated circumstances; the considerable and inexplicable fluctuations which occur in the heat processes in normal animals; the action of the drug upon the circulation affecting indirectly, and likely directly, these processes; the probable generation of heat as a result of the oxidation of alcohol; and possibly an action directly or indirectly diminishing tissue metamorphosis. Some of these being directly antagonistic, it is obvious that the nature of the results following the ingestion of alcohol will depend upon their relative degrees of intensity, and, as a consequence, the variations which occur are not without explanation.

In conclusion, these experiments, as a whole, show clearly that alcohol does not

affect the total quantity of heat produced; that more heat is dissipated than produced; that the fall of temperature is due to the excess of dissipation and is in direct proportion; and that in all likelihood alcohol by undergoing oxidation yields energy in the form of heat, thus conserving the tissues and acting as a food.

HYDRASTININE IN UTERINE HEMORRHAGE.

By Edmund Falk, M.D., Berlin.*

In the medical treatment of uterine hemorrhage we were limited to the employment of ergot, until, in the year 1883, Professor Schatz, at the meeting of naturalists at Freiburg (*Arch. f. Gyg.*, xxii., Heft. 1 u. 2) recommended *Hydrastis Canadensis*,—a remedy whose favorable results have secured for it introduction into the materia medica.

Hydrastis is said to owe its action to two alkaloids,—hydrastine and berberine. Nevertheless, neither of the alkaloids succeeded in finding the same employment as the fluid extract; therapeutically they were accorded only transient employment, and their pharmacological action was scarcely tested at all by German investigators. I made it my task to take up the investigation of the pharmacological action of hydrastine, and while thus engaged found sufficient reasons for the failure of hydrastine to meet with adoption.

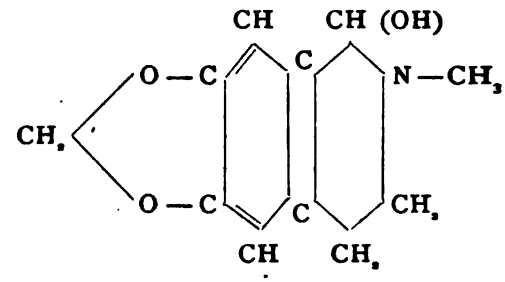
At the suggestion of Dr. Langgaard, I extended my investigations to an oxidation product of hydrastine,—the hydrastinine prepared by Dr. Freund,—and found that this exhibited in the fullest measure those pharmacological properties which we expect in a remedy intended for the restraining of internal hemorrhages.

The hydrastinine is formed, as has been found by Freund and Will, from the hydrastine, by oxidation, the latter splitting up into the base hydrastinine and into an acid,—opianic acid. If the hydrastine be gently warmed, diluted with nitric acid, and the product precipitated with alkali, we obtain the new base—the hydrastinine—in an almost pure condition.

From $C_{22}H_{23}NO_6 + O + H_2O$
(Hydrastine.)

arises $C_{10}H_{10}O_5 + C_{11}H_{13}NO_2$.
(Opianic acid.) (Hydrastinine.)

According to private statements of Dr. Freund, the hydrastinine is a derivative of isochinolin. Its formula may, with great probability be stated thus:



The hydrastinine in pure condition is perfectly white, melts in the test-tube at 116° to 117° C. The base contains a molecule of H_2O, so firmly bound that, on recrystallization from solvents free from water, it does not yield up this molecule; the salts, however, do not contain it. Hydrastinine is soluble in alcohol, ether, and chloroform with extreme facility; more difficultly soluble in warm water, and with most of the acids it forms in H_2O readily soluble salts. The hydrochlorate, $C_{11}H_{11}NO_2HCl$, is readily soluble in water; the solution exhibits slight fluorescence, possessing, with the free base, an intensely bitter taste, and is optically inactive. The action of hydrastinine upon the animal organization I have tested in frogs and rabbits.

I made my experiments in the Pharmacological Institute of the University of Berlin, employing the pure preparation furnished by Parke, Davis & Co., of Detroit, U.S.A. To Professor Dr. Liebreich and Dr. Langgaard I desire to express my sincere thanks for their kindly support in my labors.

In its application to frogs, hydrastinine acts as a paralyzing agent. The paralysis is purely central, because after ligation of the left iliac artery and subsequent injection of hydrastinine muriate under the skin of the back, we observe the occurrence of paralysis of the left posterior extremity, concurrent with that of the remainder of the body. The ischiatic nerves respond in like degree to the electrical current. In the case of toxicity produced by hydrastinine, sensibility remains undisturbed, without elevation of reflex action. Local symptoms of irritation are not produced by hydrastinine; from the point of injection, reflex actions are distributed in like manner as from all other superficial parts of the body.

Hydrastinine acts as a heart stimulant

* From the Pharmacological Institute of the University of Berlin, Germany.

The heart shows a disposition to remain in systole, displaying a tendency before the diastole is completed to renew its contraction, and therefore cause an acceleration of the pulse; with the result, however, of later on bringing about a diminution of the pulse by reason of the heart remaining longer in systole. This effect is observable also in the isolated frog's heart, which, for this purpose, is enclosed in William's apparatus, and the circulation of which is kept up by means of sodium chloride solution. We therefore observe from the curves that before the tracer in its downward movement has reached the originally lowest point of pressure a new elevation occurs, and only before the second or third pulsation do we reach the recognition of pronounced diastole. Should after several pulsations no decided diastole occur, the pulse-waves become smaller, the blood-pressure is increased, as also the frequency of the pulse. Even large doses of hydrastinine, however, do not produce complete cessation of the heart's action. Hydrastinine is, therefore, in contradistinction to hydrastine, which causes cessation of the heart's action by paralysis, not a cardiac poison.

Even in the case of warm-blooded animals, a noticeable symptom of the toxic action of hydrastinine is a paralysis, which, in the instance of rabbits, ensues after the injection of .15 gramme (2 grains) of hydrastinine to every 1000 grammes (2 pounds) of body weight. In the advanced stages of intoxication the animal remains motionless, the limbs outspread, the head depends for its support on the table, the pupils enlarge, the visible vessels strongly contracted. The breathing is slight dyspnœic, though sensibility remains intact. In poisonous doses—.25 gramme (4 grains) to .3 gramme (5 grains) to every 1000 grammes (2 pounds) of body weight—the dyspnœa becomes more and more pronounced, and with the occurrence of clonic or clonic-tonic convulsions and cramps, as we observe in the case of suffocation, breathing ceases, and finally death ensues.

Of a special interest to us in the study of hydrastinine is the fact that it produces a decided vascular contraction. As a measure of this contraction, we may make use of the increase of blood-pressure, which, in the case of hydrastinine, is decidedly stronger and more permanent than with hydrastine. In the case of the latter, while I have observed usually an increase of blood-pressure of from ten to twenty millimetres, never, however over thirty millimetres above the normal, when under the influence of hydrastinine the pressure was never less than fifty millimetres, reaching even as high as eighty to one hundred millimetres. That in reality the elevation of blood-pressure is dependent or contingent upon vascular contraction is shown by the alteration or formation of the tracings. The strong vascular tension is evidenced in the character of the sphygmographic tracings, in the decrease in degree of the dicrotic wave and the appearance of waves due to the elasticity of the blood-vessels.

At the same time, however, the action of the heart becomes slower and stronger; the individual pulse-waves, therefore, become higher. No irregularity of the heart's action occurs. Only in the case of intravenous injections of hydrastinine we observe an immediate effect of the agent upon the muscles of the heart, producing several distinct systoles before the diastole is complete. As in the case of cold-blooded animals, so also we find in the case of warm-blooded organisms that the contractility of the heart-muscle is increased by hydrastinine.

The slowing of the pulse, which occurs during the increase of blood-pressure, is conditioned by an irritation of the central vagus nerves. This does not, however, occur if the vagus nerves are divided before the injection of hydrastinine. Whereas, in the use of hydrastine, the excitation of the vaso-motor centres is followed by a paralysis, and the blood-pressure correspondingly is lowered temporarily fifty to ninety millimetres, with hydrastinine the vascular tension remains uniformly high, and the lowering of the blood-pressure, shortly before death, is dependent upon cessation of breathing, but is not due to a paralysis of the vessels. It is, therefore, possible for us, by employing artificial respiration, to raise the blood-pressure from its low ebb, and postpone dissolution almost at will.

The vascular contraction is undoubtedly conditioned or produced by a direct action on the vessels themselves, because, when we produce a complete paralysis of the vaso-motor centres by large doses of chloral hydrate, no increase of blood-pressure results. As hydrastinine displays a tendency to produce in the isolated frog's heart a quite pronounced contraction, it is capable in warm-blooded animals of bringing about a lasting contraction of the peripheral vessels by its action on the muscular elements thereof and on the nerve termini.

As an illustration of the action of hydrastinine, I adduce the following experiment on a curarized rabbit, which previously had been provided with a canula in the left ureter in order to determine the behavior of the urinary secretion.

The blood-pressure, estimated by means of the Hürtel manometer, in the case of a rabbit, weighing 2050 grammes, was before the injection 110 to 150; the average amount of urine in three minutes amounted to four drops. Fourteen minutes after the subcutaneous injection of .4 gramme (6 grains) of hydrastinine muriate, at 2.10 P.M., the blood-pressure was increased from 160 to 215; evacuation of urine, 0. In accordance with the periodic action of hydrastinine at the beginning of the experiment, at 2.20 the blood-pressure amounted from 120 to 155; and between 2.17 and 2.20 nine drops of urine were voided. The decrease in the secretion of the urine, high blood-pressure existing, was repeated several times between 2.23 and 2.26. With a blood-pressure of 180 to 250, the amount of urine observed at 2.22 was only half a drop; at 2.36 to 2.38, with a pressure of 175 to 230, one drop. Following this, at 2.40, a complete anuria ensued, which lasted until 3.22, death following. Dissection discloses that the ureter is not enlarged; pressure on the kidney empties from the canula only one drop of clear urine. Therefore the vascular contraction produced by hydrastinine in the abdominal organs is so great as to cause an entire cessation of the urinary secretion, for the reason that the contracted vessels do not permit a sufficient amount of blood to flow through the kidneys.

Before devoting special attention to the therapeutics of the agent involved, I preface the matter by a comparison of the action of hydrastine and hydrastinine. Time does not permit us to discuss at length the features of hydrastine, and therefore I must refer to my work published in *Virchow's Archiv.*

HYDRASTINE.

1. Produces a tetanic condition, beginning with an intensification of reflex activity. In the case of cold-blooded animals, a condition of complete paralysis follows, dependent upon a paralysis of the motor sphere of the spinal tract. In the case of warm-blooded animals, usually the paralytic condition precedes the tetanic stage.

2. It paralyzes the heart, and, in the case of cold-blooded animals, first the cardiac inhibitory ganglia. Thereafter the automatic ganglia are paralyzed. Even in the case of warm-blooded animals it is a cardiac poison.

3. It has a local influence on the muscular system.

4. It produces, through irritation of the vaso-motor centres, an increasing vascular tension and increase of blood-pressure. This is, however, comparatively slight, not lasting, but interrupted by a lowering of the blood-pressure and contractility of the vessels, especially during the tetanic convulsive stage of the poisoning.

5. During the tetanic attack a slowing of the pulse occurs, due to irritation of the vagus centres. An identical occurrence is observed in the slowing of pulse in the advanced stages of poisoning.

6. Subsequent to the irritation of the vaso-motor centres, we find that a paralysis follows, to which is due the gradual loss of power in muscular contraction of the vessels, the lowering of blood-pressure, and final collapse.

7. Death occurs by reason of heart paralysis.

HYDRASTININE.

1. In both warm- and cold-blooded animals this substance paralyzes, by means of its action on the motor sphere of the spinal cord, and a tetanic stage is not produced.

2. It increases the contractile power of the heart-muscle. It is not a cardiac poison.

3. It has no local effect on the muscular tract.

4. It produces vascular contractions by its action on the vessels themselves, resulting in increased blood-pressure, which, in the beginning, is periodic and quite pronounced, persistent, and not interrupted by any symptoms of relaxation.

5. Concurrently with the increase of blood-pressure, we find an irritation of the vagi, which produces a slowing of the pulse.

6. At death the lessening of blood-pressure is of a secondary nature, not dependent upon a relaxation of the blood-vessels, and removable by means of artificial respiration.

7. Death ensues in consequence of paralysis of the respiratory centres.

The above comparison, showing the absence of irritation of the spinal nerves, the favorable action upon the heart, and persistent contractility of the vascular system due to hydrastinine, convinces us that the latter is better suited for therapeutical employment than hydrastine,—the active principle of *Hydrastis Canadensis.* On the other hand, the absence of an action on the muscu-

lar portion of the tissues is a powerful argument for the subcutaneous injection of this remedy. Inasmuch as rigidity of the muscles ensues upon the injection of hydrastine in cold-blooded animals, contrasting this effect with the action of hydrastinine, we find, neither in the case of warm- or cold-blooded animals, any symptoms of irritation. In the first case, with hydrastinine, we find reflexes, having for their central point the moment of injection, and not resolvable by the use of the electrical current.

After an injection in my own person of 1 gramme (16 drops) of a five per cent. solution subcutaneously in the forearm, I have become convinced that really no irritation occurs. The injection is not any more painful than one prepared from cocaine. Directly after its use, in the neighborhood of the puncture, there was a feeling of cold and insensibility, otherwise nothing was observed of any moment, either subjective or objective.

Through the friendly offices of Dr. Landau, I had an opportunity of observing the therapeutic effects of this remedy in his private clinic.

The patients who were treated in this clinic were affected with uterine hemorrhages, hydrastinine being the remedy employed. Even though the injections could not be given with necessary punctuality and regularity, and in consequence of which the treatment was more or less interrupted, we have, however, recognized that, the patients remaining under their usual surroundings, the element of rest, which must be considered in hospital practice, was not a factor in influencing the results. This element should have been, if accessible, of importance in producing a favorable result.

Of the patients which I have had in hand until the end of October, who were treated with hydrastinine, I can name twenty-six successful cases. On the one hand, it must be taken into account that the treatment was systematic, and means of comparison are offered, especially in view of the fact that no other treatment was employed. These twenty-six patients received as a total four hundred injections of hydrastinine muriate in the form of a solution varying from five to ten per cent. I have never discovered after the use of these injections any noticeable or noteworthy cases of local irritation; never any abscesses. On the other hand, it is not always possible to avoid the infiltrations which cause a temporary swelling. These local effects disappear, however, after a few days, being disconnected with any sensation of pain, except when pressure is applied. After injection, according to the statements of the majority of the patients, there is a slight burning sensation, but no sensation which can be regarded as painful. Numerous patients treated with hydrastinine had heretofore been injected with solutions of ergotin, and they unite in praising the painlessness of hydrastinine. No untoward results follow its use, nor does any pain of a lasting character ensue. "I would rather have three injections of this remedy than one of ergotin." This was the answer given to my question as to whether the injection caused any pain. The use of hydrastinine is debarred in cases of neurotic patients, in which, owing to frequent and persistent hemorrhages, the use of ergotin, abrasion of the uterus, laparotomy, ovariectomy have been employed without results, because the pains subsequent to injection are too violent, and, after each injection, nausea and frequently vomiting occurred.

In the case of an anæmic patient who frequently suffered from fainting spells, and who displayed this tendency several times on the day of the first injection, a syncope resulted which lasted but for a few minutes. With continued use of hydrastinine, the fainting spells became rarer, in exact accordance with diminution of hemorrhage. I must here, however, note the fact that the patients frequently state that they experience after an injection, at times varying from one-half to one hour afterwards, a slight pain, resembling contractile or labor-pains, usually lasting for several hours. One patient, who had had no children, represented her impressions as if the abdomen had been constricted. It must be further stated, as subsequent to this pseudo-labor-pain, especially in cases of endometritis, a hemorrhage frequently occurs, lasting from a half-hour to several hours. In thus communicating these slight drawbacks, I have imparted everything with which I am familiar as direct results of the injection.

I have employed hydrastinine therapeutically in menorrhagia and metrorrhagia without observing any local effects; also in cases of hemorrhage which were dependent upon metritis, endometritis, and pyosalpinx; and, lastly, in a number of cases of myoma.

A description of the several cases must be reserved for my article intended for the *Archiv für Gynäcologie*, and we must here be contented with a summary or condensed review of the entire results:

In seven cases of metrorrhagia, in which hydrastinine was employed, in which any anatomical lesions were absent, the remedy proved or established its usefulness as decided; in congestive dysmenorrhœa, during its use, menstruation progressed without the occurrence of congestive troubles, the hemorrhage was much decreased, and the period shortened. An equally good result was obtained in the metrorrhagia of a virgin uterus. In all the cases observed, in which menstruation occurred every fourteen days, and had a duration of from eight to twelve days, the application of hydrastinine injections resulted in shortening the period to five days, with an interval of from five to five and a half weeks, with a noticeable increase of strength.

In the case of ovarian hemorrhages, noticeable in the instances of pronounced hysteria, no satisfactory results were obtained in two cases. In one of these a decided neurosis existed, in which the use of hydrastinine had to be discontinued. In the second case, in which abrasion of the uterus, and ergotin had been employed without results, though the menstruation immediately after the use of hydrastine decreased noticeably, its recurrence was of like irregularity and quantity as in former cases.

In two cases of pyosalpinx, hydrastinine was very serviceable, relieving the congestions of the genitals and decreasing the amount of hemorrhage. In eight cases of metrorrhagia the cause could be traced to endometritis, and, in reality, of these eight, three cases were complicated with chronic metritis. In the five cases in which only hyperplastic endometritis existed, I could perceive a decided improvement after the use of hydrastinine. In all cases menstruation had been previously very irregular. In several intercurrent hemorrhages, in others menstruation, occurred at intervals ranging from fourteen days to three weeks, lasting for a long time, naturally weakening the patients by loss of blood and other concurrent causes. These hemorrhages had been treated for some time, in the case of one patient, by repeated abrasion of the uterus, and in another by treatment with ergotin, but without results. In all of the five cases I succeeded in controlling the hemorrhages by treatment with hydrastinine, continued for from two to eight weeks. The intercurrent hemorrhages desisted, menstruation became regular, lasted only a short time, with a noticeable improvement of attendant symptoms. Women who usually were too weak to perform any work during the menstrual period, declared that after the injections they had gained sufficient strength to indulge in their usual avocations, and did not require the same amount of rest as formerly. It is necessary for me to state here that the improvement was not only temporary,—in other words, dependent immediately upon the injection,—but in several cases months have elapsed since the treatment without the recurrence of any irregularity in menstruation or hemorrhages. As formerly, no single month has elapsed without a recurrence of these abnormal conditions; the patients declare themselves cured.

Not as favorable results were obtained when the uterus was enlarged by hyperplasia of the connective tissue, in cases in which chronic metritis was concerned. However, in one case, in which the metritis and endometritis might be considered sequelæ of delivery, which had occurred two years previously, there was great loss of blood at the menstrual periods, as well as during the interval. Good results were obtained by the use of hydrastinine. The interval between menstrual periods was lengthened to about five weeks. The flow now lasts only a short time, is much less than formerly, and is without other annoying symptoms. The treatment having been discontinued during the succeeding two months, menstruation was regular, and, as far as the dimensions of the uterus were concerned, I note a contraction of from ten to eight centimetres. In two other cases I was unable to observe any satisfactory results. In one of these the intercurrent hemorrhages ceased, but the regular periodical flow was stronger than before.

Much better results were, however, obtained in nine cases of myoma of different character and involving difference in size, varying from the smallest incipient interstitial myoma to such a one of a subserous character, and of a size comparable to a child's head, in all of which cases more or less hemorrhage was the cause for complaint and treatment. After a few injections, the hemorrhage, which usually lasted from four to eight weeks, and had proved uncontrollable by ergotin, we found a lengthening of the period, and, in addition, a lapse of from five to seven weeks before its commencement; then only a slight loss of blood and a lessening of debilitating influences, dependent upon the process.

Out of twenty-six patients treated with hydrastinine there remain only four which

were not either improved or cured. The successful results can, therefore, be summed up as giving 84.6 per cent. of the cases. On the one hand, the hydrastinine has been used as a general remedy, without selection of the cases; and, on the other, because a large percentage had been previously treated with ergotin or by operative methods. Had I confined myself to a consideration of the treatment of hemorrhages, solely conditioned or dependent upon endometritis or myoma, or else menorrhagia of a purely congestive character, the percentage of recovery would have been notably higher.

A critical summary of the cases leads us to infer that curable instances are preferably those in which menorrhagia and metrorrhagia preponderate; also, those of congestive dysmenorrhœa, and in mild attacks of endometritis, by which the causation of too decided and too frequent hemorrhages are removed, define the boundaries of this treatment. I have not as yet at my disposal any experiences concerning the usefulness of hydrastinine in gynæcological practice. However, it is not unlikely that hydrastinine can exert a contractile effect on the vessels, and by that means influence the character and quantity of the hemorrhage, but it is also possible that it is an excitement or stimulant to the muscular structure of the uterus. In evidence of this position, we may adduce the fact that pains, resembling those of labor, and slight hemorrhages ensue after its injection, principally in cases of endometritis. An important question which must be considered is, How shall hydrastinine be employed? I frequently began its use during hemorrhage, and often found, in cases of endometritis, even after the first injection, a cessation of hemorrhage; in cases of myoma, after several. The most satisfactory results were, however, obtained, in cases of congestive dysmenorrhœa, or too profuse menstrual hemorrhage dependent upon structural changes of the uterus, when the treatment was adopted from six to eight days before the expected occurrence of the menstrual flow. I injected daily one-half syringeful of a ten per cent. solution, representing .05 gramme (¾ grain) of hydrastinine muriate; and, as soon as the hemorrhage commenced, a syringeful, representing .1 gramme (1½ grains), until its cessation. In cases of irregularity, I injected every other day, or perhaps two to three times a week, .05 gramme (¾ grain) of hydrastinine, using the following formula:

℞ Hydrastinine muriate, 1 gramme (15 grains);
Aq. dest., 10 grammes (150 gtt.).
D.S.—For subcutaneous injection. Dose, ½ to 1 syringeful.

As an experimental feature, I made use in the injections of a quantity reaching up to .15 gramme (2¼ grains), but discovered that these large doses offer no advantage over those previously employed, representing from .05 gramme (¾ grain) to .1 gramme (1½ grains) of the salt. It is noteworthy, however, that no bad results have been noted after the larger injection.

I may here remark that while the price of the hydrastinine is at present rather high, it should be remembered that the very moderate quantities needed—during each month not exceeding over 1 gramme (15 grains) for each patient—are not such as to preclude its employment for economical reasons.

GASTRIC ULCER, WITH FIBROID ENLARGEMENT AND INDURATION OF THE PYLORUS, OR CANCER (?).

By Chas. M. Mutz, M D., Topeka, Kansas.

MRS. JNO. DETTWEILLER, Halstead, Kansas, aged 38; mother of eight children; temperate in all things and of industrious habits; in stature below the medium; figure erect; general appearance good; previous to sickness and at this time weighing one hundred and thirty-four pounds. She has enjoyed fair health since childhood. In her ancestral history I find that her grandfather, on maternal side, suffered with some serious stomach-trouble in old age.

Mrs. D. favors her father in temperament and facial characteristics. During the first months of the year 1887 the patient felt some uneasiness in the epigastrium, not well localized, but diverting towards the right hypochondrium, and occasionally some dyspeptic symptoms were present. This uneasiness led to frequent self-examinations, and she claims she felt at times what seemed to her to be a tumor. A physician's advice was now sought, but his examination failed to reveal the tumor to him, and the dyspeptic symptoms alone received attention. The general health continued fair with this treatment throughout 1887 and with but slight increase of the local trouble. In May, 1888, the advice of Dr. T. Haering was obtained. He at

once discovered the tumor, and expressed his alarm regarding the outcome of the case in conversation with me. He did what he could to encourage the patient and treated the symptoms, giving time for a diagnosis. She remained under his care but a short time, however, and sought the advice of another physician of good reputation, who pronounced the case cancer of the stomach, and the husband was told that there was no hope. She treated with him for "cancer" about three weeks. The case at this time had so far progressed that she vomited from one to three times daily, and the epigastric pain had reached a decided severity at times. Her general health had suffered to the extent of reducing her weight to one hundred pounds.

The next physician consulted pronounced the case simply dyspepsia, and prescribed accordingly. After two weeks' treatment with this gentleman she had so far declined in strength as to be unable to leave the house, and, a few days after, her bed. At this time I was called. Found the patient in a semi-prone position, vomiting and retching.

She was greatly emaciated, with an icteroid hue of the skin, temperature 97½°, complete anorexia, and unable to retain forced alimentation above thirty minutes to an hour, though for this space of time the ingesta frequently afforded some relief. The epigastric pain varied in intensity, also as to character. The gastric contents ejected were of the characteristic coffee-ground variety. I made a crude test for hydrochloric acid by pouring an aqueous solution of methyl-violet in the unfiltered ejecta. This test should change the violet to a distinctly blue color if the acid be present. No such change was observed. However, the test to be properly made, as directed by Dr. Woodbury, in his work on "Disordered Digestion and Dyspepsia," is to add a portion of the filtered gastric contents to a weak solution of the methyl-violet in a test-tube. This will give a reaction for 1¼ parts HCl in 1000 of the filtrate. The test being so delicate, even my crude method would not fail to show the presence of the acid. You will here be reminded of the diagnostic value of determining the presence or absence of hydrochloric acid in suspected cancer of the stomach.

Respecting further previous history of the case, as related by the patient, I will add that polydipsia and polyphagia had annoyed her from the beginning, as also had diarrhœa, which generally relieved the flatulence. She stated that the vomiting had been of the character described since about two months of this time.

Further physical examination revealed a tumor in the inferior right border of epigastric space, irregular in shape, and about the size of a fist of a medium hand. Its outer margin lay beneath the vertebro-costal cartilage. It was firm, not especially sensitive, easily movable on pressure beneath it, and moved slightly by action of diaphragm on inspiration. There was no marked enlargement of the liver, though that viscus presented a decidedly pathological firmness in the right hypochondriac region. There was a constipated condition of the bowels, which had succeeded a diarrhœa, four or five days previously. Tongue was slightly coated with a brownish fur, enlarged and soft; breath was offensive, ascites existed, and her countenance wore a *tedium vitæ* expression, though she did not realize the gravity of her condition. The treatment which she had received consisted of arsenical, mercurial, and vegetable alteratives, and digestives.

I prescribed hydrochlorate cocaine, ⅓ grain, with pure pepsin, 2 grains, to be given every two hours. This was continued twenty-four hours, then given every three hours, and in addition 20 drops of fluid extract of condurango and 1 grain of iodide of potassium was given every four hours. This treatment was continued five days with the most happy results. Vomiting had been reduced more than two thirds; pain and all unpleasant epigastric symptoms had been greatly mollified. She began to desire food, and small quantities of selected diet were allowed her at frequent intervals, portions, at least, of which were assimilated. Unfortunately, we got out of first cocaine and then condurango for one week. During this time vomiting increased and every untoward symptom was augmented, in spite of everything that could be done in the way of substitution. Improvement was again established as soon as the original treatment was entered upon, and I shortly made this additional prescription:

℞ Strychninæ, grs. i;
Acid. sulphurosi, ℥i;
Aqua destil., ℥vii.
Fiat solutio.
Sig.—Teaspoonful thirty minutes after eating.

All of the grave symptoms now rapidly disappeared, vomiting ceased altogether, appetite returned, and the food was assimilated. The tumor, however, persisted for three

months before it commenced to noticeably decline. I now increased the dose of condurango to a teaspoonful and the iodide to 5 grains; other treatment same as before. Improvement from this time on was rapid. The tumor shrunk away and magically disappeared. Bowels occasionally gave some annoyance during treatment, first with a dogged constipation, succeeded by an obstinate diarrhœa. Little heed was paid to this, however, and in time a normal condition of the bowels was established.

In six months all evidence of her disease had disappeared, and at the present time she is in as good health as at any time in her life. Six weeks ago she was attacked with a remittent fever, which I treated as in any other case, and could discover no trace of her former trouble.

I have thought it of interest to sum up the amount of medicine used in this case, and find that she consumed over five pounds of fluid extract of condurango, four and one-half ounces of iodide of potassium, four and one-half ounces of pure pepsin, and one ounce of cocaine. She took no other medicine besides this, except the strychnine prescription, and left off the treatment without trouble or feeling any necessity or desire for its continuance.

Recovery proves the diagnosis; but, inasmuch as physicians of reputation pronounced the case cancer, I recapitulate the symptoms it presented, under the separate headings of "Gastric Ulcer" and "Gastric Cancer:"

Symptoms indicating ulcer.	Symptoms favoring cancer.
Age.	Previous health of patient.
Ancestral history.	Habits, surroundings, and general conditions.
Recovery.	Inception, progress, and duration.
	Tumor, hemorrhage, vomiting, and its characteristics.
	Absence of HCl in ejected gastric contents.
	Implication of liver, secondarily, and character of pain.

The weight of evidence is in favor of cancer, and in the fact of recovery alone we must rest our decision against such diagnosis. The ancestral history is of little value here,—first, because we have no reliable data; and, secondly, because it is not absolute that there must be an inherited diathesis or cachexia to produce cancer, or that very much the greater number of cases follow such constitutional condition.

The seed cannot evade imparting to the tree or fruit a full ratio of the constituents derived from its parents, and every seed from the same source must do this alike; so if there be that parental morbific state which makes one issue peculiarly susceptible to cancerous growth, it would seem that all progeny would have a like predisposition. Here, however, we are confronted with the fact that, while one member of a family may develop a cancer without appreciable exciting cause, another member of the same family may acquire dyspepsia in its worst form, a mammary tumor, as the result of a traumatism, or other conditions interfering with normal nutrition of parts especially liable to be the seat of cancerous development, and yet do not develop this malignancy.

It is not remarkable, then, that this case should have been diagnosticated cancer; I should unhesitatingly have so pronounced it had I been called upon for an expression of opinion.

The recovery, of course, overtops all other evidence, and teaches us the lesson not to be sure, and to bend the mind with energy and confidence to therapeutics. I am a believer in medicines, without a qualification. Am not satisfied that anything is incurable, not even cancer, and whenever I fail in any case, the only reflection that is absolute with me is that I did not know how to treat it. When I feel differently from this, I will no longer practise medicine.

RHUS TOXICODENDRON.

By Chas. Raymond Carpenter, M.D., Leavenworth, Kansas.

HISTORY repeats itself, as well in the medical profession, it seems, as elsewhere.

The investigations of Dr. Aulde concerning the action of rhus toxicodendron are an illustration of this fact. Prosecuted as they were independently of any previous investigations, he arrives at exactly the same conclusions that were enunciated by another investigator many years ago.

I stumbled upon this fact quite as accidentally as did Dr. Aulde upon the clue which led him to investigate the drug in question.

Upon reading the article of Dr. Aulde, in the October number of the Therapeutic Gazette, I was much impressed with it, and

resolved to give the drug a trial. Not having the facilities for manufacturing the tincture according to his directions from the fresh plant, and it being rather late in the season to gather the plant anyhow, it became a problem to secure a suitable preparation of the drug. It occurred to me, however, that I had heard of the rhus being used by homœopathists for certain inflammatory conditions of the skin simulating the well-known rhus-poisoning. Following up this thought, I remembered also to have heard that the basis of the homœopathic therapy was a system of tinctures, which it was claimed were very concentrated.

Going to my druggist, I asked him if he had any of these tinctures. He replied in the affirmative. I ascertained also that he had the particular tincture for which I was looking. I asked him what the strength of these tinctures was as compared with our standard. He said they were about the proportion of one to four, or about twice the strength of our tinctures, and were manufactured from the green drug.

Here, then, was exactly the preparation I wanted, which could not have been more satisfactory had it been made to order. I used the tincture as thus prepared in three cases:

Case I.—Mrs. B., aged about 60 years; afflicted for many years with chronic rheumatism. By long and careful treatment with all the best remedies so well known to our profession, I had been able to hold the disease in abeyance and make her fairly comfortable, with the exception of one shoulder and arm, in which the excruciating pain would recur in spite of all my efforts; and the patient had finally ceased to expect any marked relief. I diluted the "mother tincture" in such a manner as to make the proportion one to sixteen, and directed her to take 1 drop three times a day, increasing the dose by one drop each day until she arrived at a dose of 5 drops.

After the first dose the pain disappeared, and did not thereafter recur. On taking 5 drops had some abdominal pain, and reduced the dose to 1 drop. No recurrence.

Case II.—Mr. B., husband of the above, a cabinet-maker, aged 70 years; has Bright's disease, for which he has been under treatment, but has also varicose veins, with a large ulcer on the left leg, and twinges of rheumatic pain in the sciatic nerve. Administered the drug in the same manner. Pain disappeared, and I observed that incidentally to the administration of the drug the dropsy was diminished, notably in the upper extremities.

Case III.—Mr. S., grain merchant, aged about 45 years; has been a great sufferer for nine years from neuralgic headaches, traceable to hemorrhoids and a rheumatic diathesis. Prescribed—

℞ Tr. rhus toxicodendron, gtt. iv;
Dilute alcohol, f℥i. M.
Sig.—Teaspoonful three times a day.

After the first dose, which was taken in the middle of the day, on an empty stomach, headache much worse. Probably due to irritation of the stomach, as the dose was much larger than those prescribed in other cases. After dinner he lay down for a while, and then took another dose. Headache left him, and was able to attend to business. Saw him in the evening, after taking the fourth dose, on his own responsibility. Headache still absent, but felt "shaky, as though he had taken large doses of quinine." Ordered the dilution of the medicine to one-fourth the strength, and continued three times a day. Has had no recurrence of the headache for about a week.

Whether the relief in these cases will continue is a matter for the future to decide, but certain it is that great relief has been afforded so far, especially in the first and last cases. And it is my purpose to continue the use of the drug. But one day I happened to meet in a drug-store the leading homœopathic physician of the city, a very intelligent gentleman, and a worthy man in every respect, by the way, and the following colloquy took place:

"Doctor," I asked, "in what conditions do you and the members of your school use rhus toxicodendron?"

"We use it," he replied, without any hesitation, "in certain forms of rheumatism."

"What forms," I asked,—"inflammatory?"

"No," said he, "in the chronic forms, in muscular rheumatism, and in different forms of neuralgia. We use it also in the soreness of the muscles due to overexercise."

Not a word was said about skin-diseases, and, in fact, so taken aback was I that I neglected to ask about that phase of its therapy.

I remarked that I had recently read an article upon the use of rhus in rheumatic affections, and had been trying it.

"Oh, yes," he remarked, with a bland smile; "it is an excellent remedy in those conditions. We have used it for a long

time,—some seventy-five or eighty years, I think. It was introduced by Hahnemann."

[The THERAPEUTIC GAZETTE has published recently certain articles by different authors upon rhus toxicodendron, exceedingly laudatory in regard to its influence in rheumatism. Rheumatism is a disease so inexplicable in its turnings and twistings, in its attacks and retreats, that it is most difficult to judge the action of any remedy upon it. Many years ago, while I was a resident in the Pennsylvania Hospital, propylamine was brought forward as a remedy absolutely dominant over rheumatism, and I well remember that Dr. James J. Levick, my chief, came to the hospital one day, and, laughing, said, "Yesterday I saw in private practice a violent case of inflammatory rheumatism. I ordered the new remedy,—propylamine. To day the patient seems entirely well. I reasoned to myself, 'This new remedy is certainly a wonderful thing.' But the lady said to me, 'The medicine is so powerful that I never took the cork out of the bottle; its presence in the house was the only thing necessary for a cure.'"

Nearly ten years since I was much impressed with the accounts published in various homœopathic journals of Philadelphia of rhus toxicodendron for rheumatism, and being at the time visiting physician to the Philadelphia Hospital, with a large number of cases of subacute, chronic, and acute rheumatism under my care, I availed myself of the opportunity to test the virtue of the drug. I obtained the homœopathic tincture from a large homœopathic pharmacy. I tried it in all forms and doses, homœopathic, small, and large, and found it exceedingly uncertain in its action and giving no definite good result. I was not able to see that the patients progressed, on the average, any more rapidly when taking it than when left to nature and nursing.—H. C. WOOD.]

DIAGNOSIS OF OVARIAN TUMORS FROM UTERINE FIBROIDS.

At the meeting of the Medical Society of London, held December 2, 1889, DR. LEWERS read a paper on the "Diagnosis of Ovarian Tumors from Uterine Fibroids" (*Lancet*, December 7, 1889). It was more particularly the diagnosis of solid, or semi-solid, ovarian tumors that was considered in the paper. Dr. Lewers read notes of a case of ovarian tumor of this kind, and showed the specimen (a large tumor, about the size of the pregnant uterus at the eighth month). Before the patient came under his observation the tumor had been regarded as a uterine fibroid, and treated by electricity according to Apostoli's method, fortunately without puncture. Careful examination, however, convinced Dr. Lewers that the case was one of ovarian tumor. He accordingly operated in the usual way, and found that it was so. The patient made a good recovery. The points which seemed to be most important in making the diagnosis were: First, as regards the history, the fact that symptoms had only been present for eight or nine months, whereas so large a tumor, had it been a fibroid of the uterus, would probably have caused trouble for a much longer time. Second, as regards the physical signs, the absence of any marked degree of anæmia, although the patient gave a history of menorrhagia; the losses could not, therefore, have been very great, as they would almost certainly have been if this large tumor had been a soft fibroid of the uterus. Again, on vaginal examination the vaginal portion of the cervix projected in the usual way, not being displaced or deformed, as it so often was in cases of uterine fibroid. Tilting the vaginal portion of the cervix gave the impression that the uterus was not enlarged, and that there was no such close connection between the uterus and the tumor as there would have been if this had been a uterine fibroid. Further, with the sound, which only passed three inches in the uterus, no alteration in its position seemed to be produced by an assistant raising the abdominal tumor as much as possible from the pelvis. Although the general characters of the tumor were those of a solid tumor, it had, nevertheless, a distinct softness and elasticity in parts. There was, therefore, a strong probability against the tumor being a subperitoneal fibroid, which was almost invariably typically hard. Dr. Lewers said that it was only by careful consideration of all these points that a correct diagnosis could be made in difficult cases. An ovarian tumor was usually to be regarded as having a malignant tendency in direct proportion to the amount of solid tissue entering into its composition. If ovarian tumors with this tendency were mistaken for uterine fibroids, valuable time would be lost, and it might very likely be too late to remove the tumor completely when the progress of the case had at length made the diagnosis clear.

The Therapeutic Gazette

EDITED BY

ROBERT MEADE SMITH, A.M., M.D.,
Professor of Comparative Physiology, University of Pennsylvania,

PHILADELPHIA.

GEO. S. DAVIS,
Medical Publisher, Box 470,
DETROIT, MICH.

Philadelphia, 714 Filbert Street.

SUBSCRIPTION RATES FOR 1890.

(Journal increased to 72 pages.)

THERAPEUTIC GAZETTE (postage included).....$2.00
THERAPEUTIC GAZETTE with MEDICAL AGE..... 2.50
THERAPEUTIC GAZETTE with AMERICAN LANCET 3.25
THERAPEUTIC GAZETTE with AGE and LANCET... 4.00

Foreign subscriptions may be ordered through our agent in England, Mr. H. K. LEWIS, Medical Publisher and Bookseller, 136 Gower Street, London. Price 10s. Remittances may be made either by Postal Order or Stamps.

Price to Foreign Subscribers direct (postage included), $2.50 (10 shillings). English postage stamps received on remittances.

Editorial communications should be addressed 332 South Twenty-first Street, Philadelphia. Articles intended for the Original Department of the GAZETTE will be accepted only with the understanding that they are contributed to it exclusively.

Business communications should be addressed to the Publishers.

Leading Articles.

COCILLAÑA AS AN EXPECTORANT.

FUTURE historians will undoubtedly describe the times we live in as the age of hypnotics. It is only necessary to mention a compound of any character as probably possessing hypnotic properties to lead at once to the publication of enthusiastic reports on all sides as to the unprecedented success which follows the employment of the new hypnotic.

The life of such articles, however, is but brief, and we have only to look to the record of the substances introduced in the last few years as hypnotics to determine the general value of such material. Of the many which have been recommended as invaluable, but two or three preserve the confidence of the profession; and, while every one is so willing to investigate, or even to accept without investigation, any statement as to the properties and character of the hypnotic, no other drug seems capable of claiming the slightest attention.

In the THERAPEUTIC GAZETTE for August, 1888, we published an article by Dr. H. H. Rusby, describing a drug which he had discovered to be in common use in Bolivia, and which appeared to possess marked emetic, cathartic, and expectorant properties, so as to render it apparently equal in importance and similar in properties to ipecac. From that time to this, as far as we can determine, cocillaña has been employed, or, at least, results as to its use have been published, by but three different observers. In the THERAPEUTIC GAZETTE for January, 1889, Dr. S. F. Landry published a short note on a single case in which cocillaña had acted as a cathartic. In the GAZETTE for November, 1889, we published an abstract of a paper by Dr. David H. Stewart, who claimed that he had obtained the most satisfactory results from the use of cocillaña in bronchial catarrh, where he stated, from the analysis of forty cases, that this drug possessed the power of reducing cough, while facilitating the removal of bronchial secretions. The results in chronic bronchitis were especially satisfactory.

The literature on cocillaña is, we believe, completed up to the present time by the publication of an address on cocillaña, delivered by Dr. R. W. Wilcox before the New York Academy of Medicine on December 17, 1889 (*Boston Medical and Surgical Journal*, January 2, 1890).

Dr. Wilcox, in his experiments, employed the concentrated tincture, though he adds that he believes the fluid extract, in doses of from 5 to 25 minims, would be preferable, on account of the absence of alcohol.

The dose of the concentrated tincture of the bark used varied from ½ to 2 fluid-drachms, given every two to eight hours. Having made a comparison of the effects of the drug with those of apomorphine in acute bronchitis, he related a number of cases in which cocillaña was used, and went on to say that it was probably in subacute and chronic dry bronchitis that the larger field for its employment would be found. The facts that its expectorant effect was more sure than either apomorphine or ipecacuanha in liquefying bronchial mucus, that it increased the appetite, and that it acted, to some extent, as a laxative, all rendered it a most useful remedy. On the other hand, in senile bronchitis, particularly in cases of calcified costal cartilage, it might so markedly add to the bronchorrhœa as to become absolutely dangerous, and especially because it was not a stimulant to the respiratory centre, like belladonna and strychnine. In these cases, then, it was useful only so far as it liquefied secretion.

Dr. Wilcox then related another series of cases, and remarked that in chronic pulmonary disease it could be seen that cocillaña had almost its only use in liquefying secretion and relieving the acute exacerbations of associated chronic bronchitis. Under its use the cough and expectoration diminished, and the night-sweats, constipation, and lack of appetite were relieved. Naturally, when cough was due to pleuritic exudation, or was laryngeal or pharyngeal in character, cocillaña, like all other expectorants, would fail.

In conclusion, he stated that he believed cocillaña to be superior to apomorphine, except in cases of acute bronchitis taken in hand within the first forty-eight hours. It was certainly preferable to ipecacuanha, in that it did not so readily cause nausea and metallic taste in the mouth, and, moreover, assisted regular movement of the bowels. It was immeasurably safer in any stage of acute bronchitis than pilocarpine, because it did not depress the heart's action; though it must yield to carbonate of ammonium in chronic senile bronchitis. On the whole, he thought it could fully replace ipecacuanha in every sphere of action, and that in many cases it could be substituted with advantage for apomorphine, carbonate of ammonium, strychnine, and other drugs classed with more or less reason as expectorants.

Dr. Rusby (*New York Medical Journal*, January 11, 1890), who was present at this meeting, added to Dr. Wilcox's statements as to the value of this remedy. Dr. Rusby found in his experience that the drug gives its best action when its administration was somewhat forced. Thus, in the first stages of bronchitis, 15 minims, repeated at intervals of from two to three hours, was of great benefit. This would result in the production of a profuse mucous discharge, with a tendency towards the return of the mucous membrane to its normal condition and the abortion of the attack. If, however, such a favorable result was not produced, the administration of the medicine should no longer be continued in this manner. We must, then, look forward to a more prolonged treatment, and doses of from 15 to 25 minims should be given only at intervals of three or four hours. One of its most important offices he believed to be that of promoting the appetite. This was among its earliest and most marked effects, and he believed that its use in smaller doses—of say from 10 to 15 minims, an hour before meals—was plainly indicated independently for this purpose. Dr. Wilcox's paper, he thought, was specially valuable, inasmuch as it indicated a reason not only for the failure of the drug in certain cases, but for the unquestioned fact that in the hands of several experimenters it had produced harmful results in certain cases. Dr. Wilcox had explained this by showing that, while cocillaña possessed the power of increasing the discharge and its fluidity, it did not possess the power of stimulating the organs to throw off this discharge; so that its use was dangerous in cases where there was great impairment of this power.

It is greatly to be regretted that this drug, which promises to be so valuable, and to be such a satisfactory substitute for ipecac, has not been subjected to more thorough study. In Dr. Rusby's first paper he alluded to some results obtained in chemical examination of this drug, which appeared to show that it contained an alkaloid, a conclusion which is apparently substantiated by its properties, and which point to some principle which is allied to or identical with emetine. We trust that this drug will receive the study which it appears to merit, that its proper place may be fixed with certainty.

THE HYPNOTIC ACTION OF CHLORALAMIDE.

IN the *Centralblatt für Nervenheilkunde, Psychiatrie und Gerichtliche Psychopathologie*, No. 22, 1889, Dr. Karl Schaffer adds his experience to the accounts already published on the use of chloralamide as an hypnotic.

In fifteen cases of progressive paralysis, he found that it produced satisfactory sleep where simply insomnia was complained of. Where there was a slight degree of excitement, in doses of 60 to 75 grains it produced a quieting effect, though where the excitement was more marked it produced no effect, and failed in doses of 60 grains, where 45 grains of chloral were perfectly efficacious.

In five cases of mania its action was unsatisfactory when administered in doses of 75 grains, as was also the case in five cases of insanity accompanied by hallucinations. In fact, the analysis of Dr. Schaffer's cases seems to show great uncertainty in the results obtained. In some cases small doses would produce sleep, and in others large doses would be ineffective, while whenever there was any marked excitement or pain it was nearly always inert. Further, he has found that, in doses of 30 grains, the patients

complained of severe headache; loss of appetite and nausea are sometimes produced, while chilliness and hebetude were in several cases complained of on the following day. In no case did it ever prove active where the insomnia was accompanied by or attributable to pain.

In the *Zeitschrift für Therapie* for December 15, 1889, Drs. A. Robinson and Fürbringer publish certain facts in reference to the action of chloralamide, which still further detract from the reputation previously possessed by this new claimant for hypnotic honors.

The results of these authors were obtained from the administration of chloralamide, as well as somnal, to fifty different persons in one hundred and twenty different doses, and the results indicate that in fifteen instances the effects produced by somnal were good, in thirteen moderate, in twenty-two absolutely negative; while in the case of chloralamide in thirteen instances the results were satisfactory, in fourteen it was but moderate, while in twenty-three cases it was negative in producing sleep; consequently somnal failed of the desired result in forty-four per cent. of the cases, chloralamide in forty-six per cent. When next it was used as an hypnotic, to reduce or overcome pain, the percentage of successful cases was much smaller, being only fifteen per cent. in favor of somnal and but ten per cent. in the case of chloralamide. So that, therefore, even the most sanguine believers in these drugs can only claim them to be hypnotics, and not narcotics, and, if we claim that a good hypnotic should possess certainty, promptitude, and freedom from unfavorable after-effects, neither chloralamide nor somnal can claim admission into this list of drugs.

Readers of the GAZETTE will remember that one of the chief claims in favor of chloralamide is its freedom from action on the circulation. Fürbringer, however, claims that the results in his hands have been directly opposed to this statement, and he reports five cases in which the disturbing action of chloralamide upon the circulation was more marked than was the case in equivalent doses of chloral, even when smaller doses than 30 grains were employed, though, to be sure, no action upon the circulation was present, yet there was not the slightest relief of the insomnia. In the case of somnal, the action on the circulation was less marked: only in a few instances did it produce a slight slowing of the pulse. The authors even contradict the statements of their predecessors as to the freedom from action of chloralamide on the digestive functions, and refer to fourteen instances in which it produced marked gastric disturbances, and, in the case of somnal, violent vomiting in two instances, so as to lead to the discharge of bile from the stomach. Chloralamide, in doses of 30 grains, never produced vomiting, but in four cases there was marked nausea, and larger doses in nearly every instance produced emesis. In at least the majority of the cases in which these two drugs were used there was complaint the next day of more or less marked dizziness, depression, and headache. In fact, many of the patients stated that they would rather suffer from insomnia than receive either of these drugs again. Both of the drugs were employed as hypnotics in typhoid fever. In the case of somnal, 15 grains had no effect, 30 grains in one-third of the cases produced sleep without change in the activity of the heart, while 45 grains made the patients even more restless, and led them to complain on the next day of vomiting and headache, although there was no modification in the pulse. In the case of chloralamide, on account of the fear of its action on the pulse, the dose first used was only 15 grains, which was without any action whatever. 22½ grains produced considerable excitement and increase of the pulse, and, when the dose was increased to 30 grains, the pulse was greatly increased in rapidity, and became in one case so weak that camphor and other stimulants had to be administered; while, further, some of the patients were so restless that they had actually to be held in bed. The most favorable action of chloralamide was in cases of marked excitement, where five successes were obtained out of eight, but even this success was so moderate that the high percentage of failures and the unfavorable after-symptoms which accompanied the use of these hypnotics are strong arguments in the authors' minds against the substitution of either of these remedies for the old well-known hypnotics.

Finally, Dr. Halasz, in the *Centralblatt für die Gesammte Therapie* for December 5, 1889, states that experiments upon dogs fail to show that chloralamide produces any unfavorable after-effect upon the circulation or digestion, while his clinical results show that, while chloralamide did good, it was by no means an absolutely certain hypnotic, and will but rarely succeed where insomnia is due to pain. He also has found that chloral-

amide is not free from disagreeable after-effects, and will in many cases produce headache, dizziness, depression, and dryness of the throat. He, nevertheless, failed to find any severe disturbance in any case, and avers that it is free from cumulative action, and that patients do not become accustomed to its use.

In the *Therapeutische Monatshefte* for January, 1890, Dr. Langgaard confirms the necessity for caution, to which he was the first to allude, as to the employment of chloralamide as an hypnotic in cases of heart-disease, since he has found through experiments on animals that this substance produces decided reduction in blood pressure and interferes with respiratory activity. In the latter respect Von Mering and Zuntz were unable to confirm his statements, although they likewise found that in other respects experiments on animals confirmed Dr. Langgaard's clinical experience. Von Mering and Zuntz (*Therapeutische Monatshefte*, December, 1889), further, are inclined to think that Dr. Langgaard has exaggerated the depressing influence which chloralamide exercises upon the circulation; but reference to Langgaard's experiments, where blood pressure was reduced from 110 m.m. to 53 m.m., certainly shows that the action on the circulatory organs of chloralamide is by no means insignificant.

Chloralamide and somnal are thus falling into line with the other new hypnotics,—at first extravagantly praised, and then used indiscriminately, until successive failures and disasters show the need of caution in their use and help to establish their true field of usefulness. Chloralamide has not yet, we believe, proved fatal, a difference from sulphonal which, we trust, it will maintain.

THE DIURETIC ACTION OF THEOBROMINE.

WE have in pilocarpine for a long time possessed a substance which is capable of producing marked secretion by the salivary and sweat glands through direct glandular action, but until Von Schroeder recognized that caffeine and theobromine, two substances closely allied in chemical nature, were capable of increasing renal secretion, a pure renal diuretic was almost unknown. The action of this substance is, however, different from that of pilocarpine; for while the latter acts on the secretory nerves of the salivary and sweat glands, in the case of the kidneys the secretion is apparently due to direct action on the renal cells. The action of caffeine in this respect is a peculiar one. In the first place, it acts as a stimulant to the vasomotor centre and the central nervous system, and is to this extent comparable to strychnine; by the vascular constriction thus produced it reduces the renal secretion. A secondary effect, however, is that the caffeine acts as a stimulant to the renal secretory cells, and so leads to an increased flow of urine. It thus seems to possess two separate types of action which are directly contradictory, a fact which has led to the contradictory and uncertain results which have in so many cases followed the employment of this remedy as a diuretic. Von Schroeder has shown that if the stimulation of the vaso-motor centre be prevented by the simultaneous administration of chloral, or, better and safer, by the use of paraldehyde, that caffeine is then a pure diuretic, although it must be admitted that the large doses of the narcotic which are required for this effect are not free from danger. The most important result obtained by Von Schroeder is, however, found in the fact that theobromine, which, in comparison to caffeine, is almost innocuous, while free from action upon the central nervous system, is a more powerful stimulant to the epithelial cells than caffeine.

In this state of the question it is evident that clinical experiments to determine the value of theobromine as a diuretic are highly desirable, and we, therefore, regard as extremely important the results published by Dr. Gram in the *Therapeutische Monatshefte* for January, 1890. In the experiments made with a compound of caffeine and paraldehyde, Dr. Gram states that he invariably found that a marked diuretic action was produced, so that his clinical experiments are, therefore, in accord with the physiological investigations of Von Schroeder. In spite of this, however, it does not appear that this combination is suitable for therapeutic employment, for the use of paraldehyde entails so many unpleasant symptoms, such as loss of appetite, bad taste in mouth, etc., and, in fact, may even be dangerous to the patient. In his experiments with theobromine he was at the outset met by the difficulty of its great insolubility, and by the fact that it exerted a great tendency to the production of emesis. After a number of experiments, he found, however, that the administration of theobromine in coffee or chocolate served to overcome part of these

advantages, yet the action as a diuretic was by no means constant, a fact which he attributes to the slow absorption of the theobromine.

After a number of experiments with the salts of theobromine, he finally succeeded in finding a combination of theobromine with salicylate of sodium, a compound which corresponds to one of the so-called soluble double salts of caffeine. While the theobromine is only soluble in about 1000 parts of water, sodio-salicylate of theobromine, or, as he calls it, "diuretin," is soluble in less than one-half its own weight of water, on warming slightly, and remains in solution after cooling. This compound occurs as a white powder, containing fifty per cent. of theobromine, and may be administered to the extent of about ninety grains daily in 15-grain doses. It is stated that this substance may be given even to patients with serious heart affections without even producing nausea or vomiting. Dr. Gram reports detailed notes of eight different cases in which theobromine was used as a diuretic; from these he concludes that although the pure theobromine is absorbed with difficulty, after its absorption it acts as a marked diuretic without any influence on the heart. It is, therefore, a direct renal diuretic. Sodio-salicylate of theobromine, on the other hand, is readily absorbed; it acts as a powerful diuretic, and it has never produced the slightest unfavorable symptom. Dr. Gram does not believe that the diuresis is at all attributable to the sodio-salicylate, for he has in many cases employed the latter without finding the slightest diuretic effect produced.

Of course it is not to be expected that we have in theobromine a specific for dropsy, but when we recognize that nearly all the cases in which Dr. Gram employed this substance were cases in which the ordinary diuretic remedies, such as heart stimulants, had not produced the slightest relief, it is evident that theobromine acquires especial value. Of course, in cases where there is extreme degeneration of the renal epithelium, a diuretic effect is not to be expected.

EUPHRASIA OFFICINALIS AND THE TREATMENT OF CORYZA.

IT has often been said that a fortune awaits the doctor who can cure a cold; of course presupposing that the new treatment be free from the usual reproach that the remedy is worse than the disease, and that the inventor has, what we might term, a well-developed commercial spirit. We believe fully that the old days of the nauseous Dover's powder, etc., have, in this connection, at least, passed away; not that they were not useful, but that a better effect may be so much better produced, and with less discomfort to the patient.

We think that it will be found that an attack of coryza, if taken in the early stage, may nearly always be aborted by the use of a spray of a four per cent. solution of cocaine, or by the use of a snuff of bismuth, acacia, morphine, and cocaine; at any rate, in reducing the engorgement of the Schneiderian membrane, cocaine will produce and maintain relief from the most distressing symptom, while fever, if marked enough to be noteworthy, may be relieved by the antipyretics or by a drop or two of tincture of aconite. In the great majority of cases some such simple treatment as this will suffice. Every new remedy for "a cold in the head," nevertheless, deserves attention, and the most recent of these is *Euphrasia officinalis*.

Euphrasia officinalis, or eyebright, a small annual plant, common to Europe and the United States, without odor, of a bitterish, astringent taste, once enjoyed considerable popularity as a remedy for eye affections, especially in ophthalmia, but has lately almost become obsolete. In the *Boston Medical and Surgical Journal*, November 7, 1889, Dr. G. M. Garland publishes four cases of coryza in which various remedies had failed to produce any relief, but in which tincture of euphrasia, in doses of 10 drops, produced surprising relief. It seemed to have been especially efficacious in aborting coryza: when administered at the very onset of the attack, it is claimed to entirely arrest the flow of the mucus from the nose; in later stages, when the nasal discharges had advanced to a purulent or muco-purulent condition, he has had no success with it. In addition, Dr. Garland writes that he has had surprising success in the treatment of infants with *Euphrasia officinalis*. A few drops of the tincture in a little water, given to a child *ad libitum*, will give prompt relief without disturbing the digestion; as it has an aromatic taste and pleasant odor, it is readily taken.

Dr. Beverley Robinson, on the other hand, in writing for the *Boston Medical and Surgical Journal*, states that he has been familiar with the use of *Euphrasia officinalis* for a number of years as a medicine which has been stated to possess the power of

aborting an attack of acute coryza. Dr. Robinson, however, believes that it has no more influence than that of many other drugs, and in his opinion seems not to be comparable to the carbonate of ammonia in frequently repeated and tolerably large doses. In fact, Dr. Robinson claims that his experience with *Euphrasia officinalis* is in accordance with that of a large number of other physicians, both of the regular school and of the homœopaths, and that nearly all have given up this drug because of it being practically inert.

In this connection we may mention that Dr. S. Wilson Hope, in the *British Medical Journal* for November 9, 1889, claims that 20 grains of salicylic acid, given in liq. ammon. acet., three or four times a day, will so far control a common cold, that the aching of the brow, eyelids, etc., will cease in a few hours, as well as the sneezing and running from the nose, and, more fortunate still, the cold will pass off, and not finish up, as is customary, with a cough.

In another column we refer to the use of inhalations of menthol in aborting coryza.

ON SCOPOLIA CARNIOLICA—A NEW SOURCE OF HYOSCYAMINE.

ABOUT a year ago a rhizome appeared upon the market as a substitute for the root of *Atropa belladonna*, under the name of *Belladonna scopolia*. It was imported from Germany, where it was said to grow wild, and the juice was claimed to possess mydriatic properties. Two species of scopolia have already been the subject of chemical investigation, though the new rhizome is not likely to be derived from either of these plants,—the *Scopolia japonica* and *Scopolina Hladnikiana*,—since the first is indigenous to Japan, and does not grow in Europe, and the second is practically unknown outside of the botanical gardens.

This plant, which has been identified as the *Scopolia Carniolica*, has been subjected to exhaustive chemical, pharmaceutical, and clinical study by committees appointed by the Pharmaceutical Society of Great Britain, and their results are announced in the *Pharmaceutical Journal and Transactions* for December 14, 1889. The chemical constituents of the rhizome were investigated by Professor W. R. Dunstan and Mr. A. E. Chaston, who found that the rhizome contains .5 per cent. of hyoscyamine in an almost absolutely pure condition. With the possible exception of a mere trace of hyoscine, no other mydriatic alkaloid was found in the plant, which would seem by this circumstance to be distinguished from other plants belonging to the same natural order,—viz., belladonna, hyoscyamus, stramonium, etc.,—in which different proportions of atropine or hyoscine are present in addition to hyoscyamine. Professor Dunstan points out, however, that this difference may possibly be due to the methods employed by previous workers in extracting the alkaloids from these plants, which may have led to the decomposition of the hyoscyamine by heat or by fixed alkalies. Among the other compounds isolated from the new drug were a crystalline sugar resembling dextrose, a fluorescent substance, and cholesterin. The latter substance is present to the extent of .1 per cent., and it was subsequently found to be contained in the root of *Atropa belladonna*. The resemblance between the two plants is borne out by a comparison of the structures of the roots, which has been made by Mr. Greenish.

Dr. Lauder Brunton undertook to try the therapeutic effects of the drug, but was compelled to abandon his work before the experiments were completed; but, as far as his results go, and those of Sir Dyce Duckworth, who carried on also an independent series of experiments with this drug, they seem to show that the preparations made from this rhizome possess properties similar to, yet not identical with, those of belladonna; apparently with the advantage in favor of the scopolia. It does not give rise to the dryness of the throat which is produced by belladonna, and it did not in cases where it was used internally produce dilatation of the pupil. The use of the liniment was likewise very efficacious in reducing pain and swelling in rheumatism. No atropine was found in this rhizome, although it is, in fact, a matter of doubt as to whether atropine is actually present even in belladonna, or, indeed, in any plant; for in the presence of an alkali it is generally maintained that hyoscyamine and hyoscine readily are converted into atropine, and it is by many believed that the natural state of the alkaloid in *Atropa belladonna* is that it is hyoscyamine, and that it is in some way converted into atropine. For Professor Schmidt (*Pharm. Zeitung*, September 25, 1889) has found that atropine is absent from belladonna-roots obtained from plants of over a year's growth, whether examined fresh or

after prolonged drying, hyoscyamine being the only alkaloid present; while in younger roots atropine and hyoscyamine are both said to be present. Professor Schmidt also reports that he has found both hyoscyamine and hyoscine in the *Scopolia japonica*. It is thus seen there is considerable obscurity attached to the chemical nature of the alkaloids of this natural order,—namely, stramonium, belladonna, etc.

The results of the authors above alluded to are, however, especially valuable, as indicating a cheap source of hyoscyamine, and of furnishing a drug which, in all its properties, appears to be closely identical with *Atropa belladonna*.

Reports on Therapeutic Progress.

THE NEW HYPNOTICS.

At the last annual meeting of the British Medical Association, in the discussion of the action of the newer hypnotics, DR. JOHN GORDON read a paper based on the results attained from his physiological and clinical studies as to the use of urethan as a hypnotic (*British Medical Journal*, November 2, 1889).

Urethan is the ethylic ether of carbaminic acid, and its formula is $C_3H_7NO_2$. It occurs in transparent crystals, which have a cool, saline, and somewhat bitter taste. It is readily soluble in hot or cold water, is also soluble in its own bulk of rectified spirit, but slightly less soluble in ether. Its ready solubility in water, as well as its non-irritant nature, allow of its being employed hypodermically as well as by the mouth.

A series of experiments were performed on frogs to observe the action of the drug on the reflex functions of the spinal cord. The method employed was to decerebrate a frog, to wait till the shock of this operation had so far passed off, to ligate the iliac artery and vein of one limb, to suspend the frog by the head, allowing the hind limbs to depend, to immerse the hind limbs alternately or together in a solution of sulphuric acid (1 in 600), to record by a metronome the time of movement or withdrawal from the acid solution, and to well wash in water the limbs after each withdrawal. When the moment of withdrawal or movement was almost the same in both limbs, to inject below skin of thorax the dose of urethan dissolved in salt solution (.75 in 100), and to proceed with the immersion as before. The result of a large number of the experiments showed that a longer period of time elapsed between the application of the stimulus and the reflex action. The urethan thus diminishes the excitability of the spinal cord.

That urethan had an action on the peripheral endings of the sensory nerves was shown by the elongation of the period at which the unligated limb was moved or withdrawn from the stimulus; and also, in some cases, by its rapid abolition of all movements in the unligated limb. It was further observed that sometimes frogs, in which reflex action had been quite abolished by .5 decigramme of urethan, recovered their reflex in twenty-four hours, and even in forty-eight hours, when kept carefully moistened with a three-fourths per cent. salt solution. The great majority of frogs died shortly after the administration of this dose of urethan.

Dr. Gordon was likewise able to confirm in his experiments the statement of M. Coze, that since urethan diminishes the excitability of the spinal cord, it is antagonistic to strychnine, and may, therefore, be used with value in conditions attended with convulsions, and more especially in cases of tetanus. His experiments on blood-pressure and respiration indicated that the most marked feature of the influence of this drug is in slowing the respiration, a reduction being produced after each injection of urethan. There was also a general tendency to slowing of the pulse and a gradual reduction of blood pressure, but after division of the vagi the pulse rose within two minutes to its original rate, and the blood-pressure to within two millimetres of its original rate. This seems to point to an action being exerted by the drug upon the central nervous system; in all probability on the vagus roots. The acceleration of the pulse and the elevation of the blood-pressure are more than could have been anticipated under the circumstances, as a result of vagus tonus, provided that no stimulation of the central vagus apparatus had been present. His experiments to determine the amount of urethan producing irritation showed that the nerve-trunk was not markedly affected by the smaller doses (two per cent. solutions), but when treated with stronger doses (four per cent. solutions) the nerve-trunk speedily lost its conductivity, which it did not recover by a subsequent washing in salt solutions (three-fourths per cent.). On the muscles Dr. Gordon found that the result of a series of ex-

periments on this part of the subject showed that two per cent. solutions of urethan in salt solution abolished the normal tetanic curve, which, on further stimulation at definite periods, became still weaker, and finally failed to respond to faradic stimulation. If the muscles at this point were well washed in salt solution, and immersed in it for five to ten minutes, and stimulation again applied, the irritability of the muscle was found to have been so far recovered; subsequent washings and immersions still further tending to restore the irritability; and that this irritability of the muscle substance was speedily abolished, as shown by the slowing and abolition of the normal tetanic curve; and that the muscle, although immediately washed at this point in salt solution, showed only slight tendency to recover its irritability.

The action of urethan on muscle substance is much like that of paraldehyde. Both drugs in weak solutions temporarily abolish the irritability of muscle substance; both allow of considerable recovery of the irritability when the poisoned muscle is speedily washed with salt solution; and with strong solutions, urethan, like paraldehyde, tends to destroy the irritability of muscle, so that washing in salt solutions only feebly recovers it. Also with strong solutions both drugs tend to cause the muscle to pass into rigor. Urethan, however, does not show any initial rise of irritability in the muscle when applied in weak solutions, as paraldehyde often does.

Dr. Gordon's clinical experiments were made upon boys recovering from minor surgical ailments. They were placed on a selected mixed diet of their own choice, the fluids of which were carefully measured and the solids accurately weighed. This regulated diet was steadily continued during the time of the observations. The dose, which was given dissolved in cold water, was given in the morning at nine o'clock. It was thought that by choosing this hour its action as a hypnotic could be better observed, as the subject, presumably having had a good night's rest, would be less inclined to sleep. After the administration the patient was kept quiet in bed. The following summary affords the results of his observations, both clinical and experimental:

1. It reduced the excitability of the reflex action of the spinal cord.

2. It diminished peripheral sensation.

3. Pharmacological and clinical observations showed that it slowed the respirations.

4. It also slowed the pulse.

5. It lessened the blood-pressure immediately after its injection, but the blood-pressure had a distinct tendency to recover soon after the injection, and finally rose to near its initial height.

6. It had an anæsthetic action as a sequel to the administration of ether.

7. Small doses (two per cent. in salt solution) did not markedly affect the motor nerve-trunk.

8. Large doses (four per cent. in salt solution) quickly destroyed the conductivity of motor nerves, and subsequent washings did not recover it.

9. In frogs poisoned with urethan, the minimal irritability of nerve was still greater than that of muscle, and subsequent washings in salt solution increased the irritability of the muscle, but did not alter that of the nerves.

10. That small doses (two per cent. dissolved in salt solution) abolished the irritability of muscle, but that washing in salt solution so far restored the irritability.

11. That large doses (four per cent. in salt solution) almost entirely destroyed the irritability of muscle, and that subsequent washings in salt solution only slightly (and in many cases not at all) tended to restore the irritability.

12. That small doses (5 to 10 grains) increased the excretion of urea.

13. That large doses diminished the excretion of urea.

14. That the fluid constituents of urine were slightly increased while it was administered.

15. In one case the urine was slightly alkaline after doses of 20 and 40 grains.

16. That the skin with large doses showed a tendency to perspiration and flushing.

17. That it had no effect on temperature.

18. That no hypnotic effect was produced in good health, even in large doses.

19. That its prolonged exhibition tended to cause loss of appetite, and that vomiting occasionally followed its continued administration.

20. That in cases of insomnia it was somewhat unreliable.

21. That the sleep which followed its administration was tranquil, pleasant, and natural.

22. That no confused feelings were experienced when the patient was awakened during the action of the drug.

23. That it was not contraindicated in cases in which a slight degree of pain was present.

At the same meeting DR. T. CRANSTOUN

CHARLES stated that he had found paraldehyde to be a most excellent hypnotic. It acted promptly and safely, was not cumulative in its action, and did not readily lose its effects; it appeared also to strengthen the heart's action, and to diminish the frequency of the pulse. The only objections to its use were its disagreeable and nauseous taste, and the odor it imparted to the breath. He had never noticed the hæmoglobinuria which had been stated occasionally to occur under its use. To one patient of his it had been given for the last seven months with the greatest advantage; he had also taken it himself with most beneficial results. Rarely had its action been followed by headache or digestive disturbance of any kind. Whiskey had served as a very good vehicle. To students who had been afflicted with general wakefulness during examination time it had proved of great service; and two students who obtained distinguished places in the recent Indian Civil Service examinations, and who had become almost sleepless, used it with the greatest advantage during the greater part of the time these examinations lasted.

As to hypnone, although when it produced sleep this was deep and lasting, yet it failed so often in his hands that he had given up administering it. Besides, it was nasty to take, may irritate the stomach, and imparts a bad odor to the breath. In some cases of simple insomnia, however, it acted fairly well, and gave very good results in some phthisical patients.

The action of amylene hydrate gave great satisfaction, sleep generally being produced rapidly, and lasting six to twelve hours. Burgundy and sugar were good vehicles. The respiratory and cardiac activities were not affected, neither was the digestion. It acted well when combined with morphine for the relief of sleeplessness associated with pain. In cases of sleeplessness with delirium tremens, melancholia, and phthisis, it was very useful; indeed, it sometimes appeared superior to paraldehyde, which it excelled, in that its taste was not so repulsive nor the odor imparted to the breath so unpleasant. There was rarely any disturbance of the appetite or bowels produced, and in a case of fatty heart, in which urethan had entirely failed, it succeeded admirably. It slightly diminished the reflexes, slowed the heart, lessened the blood-pressure, quickened the respiration, and in one or two cases lowered the temperature. On the whole, therefore, Dr. Charles had found it most satisfactory as a hypnotic.

Urethan, on the other hand, frequently disappointed in its action. In addition to its want of energy in many cases, it frequently brought about gastric disturbances. In himself light and imperfect sleep was produced by 45-grain doses in about twelve to fifteen minutes after a short stage of slight excitement, lasted six hours and a half on an average, produced no headache, and the presence of the drug could, after waking, be detected in the urine. In cases of delirium tremens it was of no value, but was fairly useful in the sleeplessness of children and in some cases of melancholia.

Methylal acted efficiently in a few cases of sleeplessness, with gastric or intestinal irritation. The blood-pressure was slightly lowered, and the respiration slowed.

Hydrate of butyl chloral had proved most serviceable in his hands in a case of Bright's disease, with hypertrophied heart, in which chloral had produced alarming results. No depressing action on the heart apparently occurred under its action. It was particularly useful in the sleeplessness associated with headaches, tic, facial neuralgia, and certain uterine derangements. Combined with sodic or potassic bromide and cannabis indica, it occasionally gave splendid effects, particularly where the insomnia was attended with high arterial tension.

Sulphonal, however, was the hypnotic Dr. Charles had been using most frequently of late, and with the best results. The sleep was produced slowly, as a general rule, sometimes very many hours even elapsing before any hypnotic action was manifested; but the sleep was both light and refreshing, and no deleterious effects were produced on the circulation; the arterial pressure was slightly lowered, though in three cases a subsequent slight rise was noticed; indeed, the only bad after-effects appeared, as a rule, to result solely in cases where the dose had been too small. In one case alone, that of a nervous girl, aged 16, had he observed any serious after-effects,—headache, hysterical attacks, some hyperæsthesia, with thickness of speech, giddiness, and temporary loss of power in the muscles of the legs showing themselves. In the sleeplessness of phthisis it acted well; in simple insomnia, in the insomnia of Bright's disease, in that accompanying intercostal neuralgia and delirium tremens, and in a case of mania where chloral and paraldehyde had failed, in all it gave the fullest satisfaction.

In a case of epilepsy, with motor spasms

and sleeplessness, and in the case of a betting man after races in which he had lost heavily, and where there was delirium with great excitement, subcutaneous injections of hyoscine ($\frac{1}{100}$ grain) rapidly produced deep sleep, preceded by a short stage of stupor.

In a few cases—nervous palpitation, hysteria, urogenital excitement—much benefit had also been gained from monobromated camphor; while in the sleeplessness of business men a late supper of beer and salad, sometimes the slow sipping of beer containing lactic acid, the administration of strychnine in small doses, the bathing of the feet in hot water and of the head in cold water, or the application of a hot-water bag to the abdomen, often induced the wished for sleep most happily and effectually.

Dr. Needham (Gloucester) considered urethan to be of very small use, a very mild hypnotic and very uncertain; sulphonal to have the disadvantage of being uncertain in its action, insoluble, and extremely liable to produce derangement of the digestive organs. He regarded paraldehyde as one of the most valuable hypnotics in use, generally certain in its action, causing no constipation, no loss of appetite, no decrease of weight. The dose should be fairly large—not less than a drachm—and should be repeated. It calmed excitement and produced sleep, and expedited the recovery of patients in incipient cases of insanity, and from an acute insanity in its more advanced stages. The taste was covered largely by fluid extract of licorice. If long continued, it was liable to cause irritation of the mucous coat of the stomach.

Mr. J. P. Richards (Hanwell) had found urethan practically useless, and had never found it act as a sleep-producer in the insane. On the other hand, paraldehyde had had a most marked hypnotic action in cases of acute or delirious mania, but even in these he had found that the dose had to be a large one in the first instance, and repeated by a smaller one at a short interval. In many cases of delirious mania he had tried in vain the usual hypnotics; sleep would not come. He then, as a last resource, gave a pint of Scotch ale with the desired effect; the patient had had a refreshing sleep, and had awakened practically recovered.

Dr. H. Woods said that chloral hydrate was so excellent a hypnotic that one of its compounds might probably be found which would be free from its defects. The principal of these were bad taste, depression of the heart, and slight analgesic influence. Chloral hydrate was frequently prescribed with one of the bromides, and he was of opinion that in such a mixture we had a definite compound formed. If the drugs were mixed in molecular proportions, the change was complete. Chloral hydrate mixed with ammonium bromide in solution appeared to form a compound which he might call ammonium trichlorethidene bromide (chloral hydrate being trichlorethidene alcohol). The above compounds decomposed in the solid state; but if chloral hydrate was dissolved together with ammonium bromide in molecular proportions, a liquid of a fairly good taste was obtained, which he found to be very free from depressing action on the heart, and which had a more definite analgesic effect than chloral. He found such a combination most effective in simple insomnia, and very harmless.

Dr. Gordon remarked that he had found valuable results from the action of paraldehyde in doses of 1 to 3 drachms; that it procured quiet, refreshing sleep, and that little gastric disturbance followed its use, and that syrup of lemons so far abolished its disagreeable taste. He recommended the use of urethan, in doses of 30 to 60 grains, in cases where a mild hypnotic action was indicated, and where there was not evidence of much pain; in cases of sleeplessness, in senile changes, in hysteria, and certain pulmonary conditions. From sulphonal he had obtained good results in many cases; he recommended, since the drug was insoluble, that it should be given in the finest possible state of subdivision, and, as the chlorides had a soluble influence on the drug, to combine it with them. In one case he noticed that the drug had a marked action over the motor apparatus, that the patient had extreme difficulty in walking, that he was giddy, and that all his movements looked like those of one under the influence of alcohol. But the higher centres were not much affected; the patient was able to answer any question, knew every person he saw; and no headache followed, although he slept nineteen hours, nor was the gastric function interfered with.

Professor Leech said, in reply, that the discussion indicated the necessity for a still more minute examination of the influence of hypnotic drugs. In order to use a drug with confidence, it was essential that we know its possible as well as its ordinary effects; that we should know the direction in which it tended to influence all the organs, for it

sometimes came to pass that an action usually little noticeable, in man at least, was exaggerated and became a marked, and it might be troublesome, feature among the symptoms produced by the drug on diseased conditions, or in individuals peculiarly constituted. By knowing thoroughly the physiological action of the drug, we might not only anticipate its possible evil influences, but might to some extent guard against them. Hence the great value of such work as that done by Dr. Gordon, to whom the thanks of all engaged in therapeutics were due. On one point his experience of urethan differed from that of Dr. Gordon, who had not been able to find that urethan produced sleep in healthy people in the daytime. Doses of 2 drachms had seemed to him (Dr. Leech) distinctly to induce sleep in healthy people in the daytime. It was not, of course, easy to say whether sleep which followed a drug was due to the drug or not, but he had seen sleep so often occur in those who had taken urethan, while it did not occur in those in the same ward who had taken nothing, that he could hardly doubt that the sleep was the effect of the drug. It must be remembered, however, that sleep tended to follow quickly after urethan; and if prevented, as it easily might be, it did not occur again. Hence it so often happened that no sleep followed this drug's administration; its chief use, indeed, was to accentuate the tendency to sleep. The experience of Dr. Gordon that repeated doses of urethan caused sickness was interesting, and coincided with the results noted in the paper in one case. With regard to sulphonal, it seemed, from the remarks which had been made, that this drug was capable of producing more unpleasant effects than had been supposed. Great difference of opinion appeared to exist as to the effect of this drug on the stomach, and it seemed just possible that different specimens of sulphonal might differ in the character of their effects. The difference in the effects noted from the use of hyoscine most probably arose from changes which occurred in the drug itself, but tropein compounds were apt to undergo spontaneous changes; sulphonal was not. The experience of one speaker that ale was a useful hypnotic at times was quite in keeping with the views held by pharmacologists as to the influence of the alkyls, of which the sedative principle of the ale is one of the best known compounds. With regard to the use of bromide combinations, which had been mentioned, it seemed probable that our most prized hypnotics of the future would be those not containing halogen elements, since those elements tended to give combinations in which they were contained too great a depressant effect on lower nerve-centres and on muscle.

The discussion on the new hypnotics was opened by Dr. Leech, who read an elaborate paper as to the value of these remedies, the greater part of which has already been laid before the readers of the GAZETTE. We will simply add that from his own observations the order of hypnotic potency seems about as follows:

1. Sulphonal.
2. Amylene hydrate.
3. Paraldehyde.
4. Urethan.
5. Methylal.

He stated that none of these drugs equal chloral hydrate in the certainty of their action, although it is true that both sulphonal and amylene hydrate may succeed where average doses of chloral have failed.

INFLUENZA THERAPEUTICS.

The duration of an acute attack of influenza, or dengue fever, or whatever else it may be that ravages Eastern Europe and occupies the mind of the Westerns, is so short that no small amount of professional agility is required to make any headway with treatment before the malady has girded up its loins and betaken itself elsewhere, leaving a haggard and enfeebled ex-sufferer to mourn its loss. The principal remedies used in German and Russian hospitals and in private practice have been antipyrin and codeine, in the proportion of ten grains of the former to a sixth of a grain of the latter, in conjunction with a little bicarbonate of sodium. In some instances salol is reported to have mitigated the severity of the symptoms, any nasal trouble being treated at the same time by means of a lanolin ointment containing menthol and cocaine. A spray of wine of ipecacuanha and a dose of Dover's powder at bedtime is claimed to nip the affection in the bud, and there can be no objection to giving them a trial. Quinine and tonic meat and wine preparations are very useful after the acute stage is passed and the patient enters upon a limp and protracted convalescence. It is, of course, very difficult to gauge with accuracy the properties of the essential oils,

such as pinol or pumiline, in averting an attack, but they have the merit of being agreeable and refreshing.—*Medical Press and Circular*, December 25, 1889.

PICRIC ACID IN THE TREATMENT OF SKIN-DISEASES.

M. CAVELLI (*Gazette Médicale de Paris*, November 16, 1889) claims that picric acid is a remedy of great efficacy in the treatment of various skin-affections characterized by cutaneous inflammation. Thus, he claims that in the course of an epidemic of erysipelas he has obtained the best results by the external use of picric acid; so, also, in the case of lymphangitis, occurring in a gouty subject, as a complication of caries and necrosis of the phalanges of the toes, the local application of picric acid very rapidly reduced inflammation and pain. Similar effects were also obtained through the use of this remedy in a large number of cases of eczema and erythema. As regards the mode of action of picric acid, the author suggests that in penetrating the cells of the corneal layer, picric acid forms a protective layer in the skin, and that, in virtue of its astringent action, it affords a protection to the malpighian layer, so leading to a reduction of the inflammation. While, finally, he thinks that perhaps through entering into the lymphatic vessels picric acid may exert an antiparasitic action. He employs a solution in water,—of 1½ parts of picric acid to 250 parts of distilled water,—applied externally five or ten times daily.

VALUE OF SALICYLATE OF SODIUM IN DYSMENORRHŒA.

In the *Boston Medical and Surgical Journal*, December 19, 1889, DRS. E. REYNOLDS and G. HAVEN publish notes of fifteen cases of patients applying to the Boston City Hospital for relief of menstrual pain.

From these fifteen cases, two should be excluded on the ground that the relief may be, in part, ascribed to a general improvement due to other treatment. One of these was a case of general pelvic congestion, with an anteflexed cervix and an ill developed uterus; the patient was packed on alternate days, and was given salicylate of sodium; and the next catamenia was for the first time painless. The second, a case of stenosis of the internal os, was treated by the use of dilators, and the salicylate of sodium was administered in anticipation of the catamenia, with marked relief of pain; but in neither of these cases does it seem safe to ascribe the improvement to the use of salicylate of sodium alone.

Of the remaining thirteen, three were found to have anteflexion of the cervix, three had catarrhal salpingitis, one was the subject of a membranous dysmenorrhœa (?), and one was affected with a bad endocervicitis, making eight cases in which a cause for the existence of the pain was found. Of the others, in two the pelvic organs were thought to be normal; in two no examination was made; and in the remaining case symptoms apparently due to a cystocele and a slight prolapse of the uterus were relieved by a pessary, without effect upon the very severe dysmenorrhœa, for which no cause was found; in all, five cases in which the symptoms were unexplained.

Of the three cases of anteflexion, one was not improved, one was partly, and one completely relieved; no other treatment having been employed. The three cases of salpingitis were all promptly and completely relieved so far as their dysmenorrhœa was concerned; although the improvement in the local condition was much more gradual and less marked. The case of membranous dysmenorrhœa was somewhat but not wholly relieved by her first experiment with salicylate, which she has not had time to try again; the patient with endocervicitis said, on her next visit, that she had "come round without knowing it,—a great change." She continues its use, and remains well. Of the five unexplained cases, both patients, with apparently normal organs, were completely relieved; the case of cystocele and prolapse with dysmenorrhœa from unknown cause, was also completely relieved; of the two who were not examined, the pain was wholly controlled in one, while the other was unrelieved. This latter patient was suffering from a sharp attack of probable subacute pelvic peritonitis, and was possibly not a fit subject for the experiment, but is added to the list for the sake of fairness.

In conclusion: of the thirteen cases, nine were completely and two partially relieved, while in two the treatment was without effect. In two of the cases (one normal, one of salpingitis) the omission of the salicylate was followed by a return of the pain, and at the next catamenia its resumption resulted in a painless flow. It was given to all cases in

10-grain doses, t. i. d., for the week which preceded the catamenia, and continued until the time when the pain usually disappeared; but it is an open question whether the same or larger doses given during a shorter time might not have been equally or more effective. We are unable to judge whether any permanent benefit resulted, and the authors say that they consider this report as a mere preliminary to further observation, which, with a larger number of cases, may, of course, largely alter the proportion of relief obtained.

A NEW ANTISEPTIC DRESSING.

At a meeting of the Medical Society of London on November 4, Sir Joseph Lister described a new antiseptic dressing, which he said he had now used for a year in his wards at King's College Hospital with excellent results. He recommended the new dressing as the most satisfactory that he had hitherto met with. Sir Joseph pointed out that though sal alembroth had been largely used in surgical practice in consequence of his supposed preference for it, its employment had never received his "published sanction." It had the disadvantage of being so excessively soluble that it was washed out of the dressings with the greatest ease by the discharges, so that there was always the risk, if the wound discharged freely, that the antiseptic would be altogether washed away, even if large masses of gauze were used. Further, the discharge in taking up the sal alembroth formed an intensely irritating solution, which produced crops of pustules and even large blisters near the edge of the dressings. In describing the numerous experiments he had carried out with the object of finding a better antiseptic, Sir Joseph Lister said that the real point to determine as to any given agent was not whether it would kill germs, but whether it would prevent the development of organisms. Mr. Martindale called his attention in February, 1886, to cyanide of mercury as a substance which might prove to be a valuable antiseptic, one, too, possessing the advantage of not coagulating albumen. Sir Joseph Lister found that this substance had a remarkable inhibitory power over the growth of organisms, but it had the drawback of being highly irritating. A double cyanide of mercury and zinc, formed by mixing together a solution of the double cyanide of mercury and potassium with a soluble salt of zinc, the zinc taking the place of the potassium, was then tried, with the result that it was found to possess most important antiseptic properties. In the proportion of $\frac{1}{5000}$ part it kept blood-serum perfectly free from the development of organisms for eighteen days in spite of potent septic inoculation. Dressings were then prepared by diffusing this "zinco-cyanide of mercury" in water, with a little glycerin added to fix it and prevent it from dusting out. In view of the very slight solubility of the double cyanide in serum, some of the very soluble cyanide of mercury was associated with it. Some admirable results were got with this "cyanide gauze," but it was found to cause irritation of a peculiar kind, and suppurations also sometimes occurred at a late period of the case, such as Sir Joseph had never been accustomed to with carbolic dressings. It was found that this could be prevented by first saturating the gauze with the double cyanide and then putting it into a solution of starch. This fixed the particles of the cyanide most effectually in the gauze. Subsequently the double cyanide and starch were prepared with sulphate of potassium; in this way the mixed salts could be powdered and easily diffused in water. This compound should be moistened before use with a $\frac{1}{1000}$ solution of sublimate, so as to destroy any organisms there might be in the dressing. The layer destined to be put next the skin is washed in a solution of carbolic acid; this washes out the sublimate. By this means Sir Joseph Lister said he had obtained perfect results in practice in wounds of every description.—*London Medical Recorder*, November 20, 1889.

THE USE OF OXYGEN IN THE TREATMENT OF LEUCHÆMIA AND GRAVE ANÆMIAS.

The treatment of the more serious forms of blood diseases is still so unsatisfactory that any addition to our means of counteracting them is deserving of record and careful scrutiny, and we, therefore, call attention to several cases of severe anæmia reported in the *American Journal of the Medical Sciences* for November, 1889, by Dr. J. M. Da Costa and Dr. E. P. Hershey, in which the changes in the blood were fully noted in every detail, and whose conclusions, therefore, rest on actual minute inspection of the blood-corpuscles. The first case was that of a boy, aged 13, who had been subject to attacks of jaundice from infancy; the mother states that she believes the child had a number of malarial seizures, but was not certain. When first seen (February 5, 1889)

the patient was pale, the conjunctivæ pearly and somewhat jaundiced. The spleen was enlarged, extending from the eighth rib to four finger-breadths below the margin of the ribs. The tumor had been noticeable for a year previous. For nearly two years the patient had spells of weakness, extending over a period of three weeks, and at intervals of two to three months. Occasionally hemorrhages from the nose occurred during this time, but never sufficient to cause alarm. His strength gradually failed, and he was discharged from his position as cash-boy in a dry-goods house, being unable to stand the work.

When first seen, the blood was examined, and found to contain a sufficient excess of white corpuscles to warrant the diagnosis of splenic leuchæmia. This view was substantiated by the fact of the white corpuscles steadily increasing in number, while the red diminished. February 5, 1889, the red numbered 2,350,000, the white 105,000 to the c.mm.; by May 20 the white corpuscles had increased to 320,000.

Having been on arsenic some time previous to his first visit, the patient was given Basham's mixture and 3 grains of the extract of ergot three times daily, without, however, producing any effect upon the spleen. Galvanism was tried over the splenic region for two months without any improvement. Trinitrine was given at the same time, but the patient grew weaker under this treatment, and arsenic was again resorted to, though without amelioration.

On June 1 he began to inhale oxygen, and he improved rapidly under the treatment. He was given daily from twenty to thirty litres of oxygen, which was continued until August 5. At this time the boy returned to work, much better than when he had left it. The blood was again examined September 2, and found to be so near the normal that a count of the white corpuscles was considered unnecessary, the red being increased to 4,850,000, and one white found to about every four hundred red. The oxygen treatment was stopped.

The second case was that of a man, aged 35, who had a history of malaria and an attack of typhoid fever, in which he lost thirty pounds. He also had at one time suffered from hemorrhage from the nose, lasting for twenty-one days. The hemorrhages occurred daily, and were uncontrollable, except by plugging the nostrils; large doses of ergot and gallic acid were administered. By the time the hemorrhages had ceased his weight had fallen nearly fifty pounds, so that in about six months his weight was reduced from two hundred and twenty pounds to one hundred and forty-four. His habits had always been highly intemperate. When he came under the care of the authors he suffered from intense thirst and frequent micturition, passing large quantities of water, containing neither albumen nor sugar. The spleen was enormously enlarged; it passed nearly two inches beyond the umbilicus. There were profuse diarrhœa and great emaciation. Ergotin was administered three times daily, followed by tartrate of iron and potassium, and that by the sulphate of iron. Through the use of this treatment the diabetes insipidus disappeared. It was then resolved to try arsenite of sodium, which was administered in $\frac{1}{16}$ of a grain doses. There was some improvement under the use of arsenic and Basham's mixture for a time, but finally the patient grew worse, and oxygen treatment was commenced.

An examination of blood at this time showed that the red corpuscles had diminished to 1,440,000, and the leucocytes had increased to 1,120,000, a proportion of as 1 to 1$\frac{1}{3}$. The patient had been in the West three months previous to this time. When he returned to Philadelphia it was found that the character of the disease had assumed a most serious type. His appearance was striking. The veins of the forehead were largely distended, and the capillaries plainly visible in many parts of the face, most prominent on the nose. The spleen was as large as ever, the abdomen greatly extended and tense, assuming a spherical shape. The knees were shaky; the feet were swollen, the swelling extending up as far as the knees. Shortness of breath was produced upon the slightest exertion; he always felt extreme fatigue. The spinal column was tender to the touch; the sitting posture produced severe pain in the bones of the ilium. A distinct anæmic murmur was heard over the base of the heart. Profuse watery discharges from the bowels had set in four days before his return, and still continued. He reported that he had been feverish for weeks, his temperature at that time (June 26) being 102.3°; he was much depressed in spirits. He stated that, having himself made a careful study of the disease, he knew there was not the slightest hope for him. He was willing and anxious that an experienced surgeon should attempt to remove the spleen, knowing that his chances were of the very slightest.

Besides the condition of the blood in regard to the relation of the corpuscles, it might be of interest to add that its color was opaque, it flowed freely from the puncture made by the lancet, and coagulated very slowly. Micro-

Dr. Cyrus Edson, chief inspector of the Health Department of the city of New York, has had a wide experience with sulphur dioxide as a disinfectant, and is of the belief that it is a thorough and an almost perfect destroyer of the infective matter of the acute exanthemata and diphtheria.

In the *Medical Record* he publishes details of his experience with this substance, comparing the total number of cases of different contagious diseases with the number of cases recurred, the recurrence of which could be attributed to infection after fumigation, so as to show the efficiency of the agent in question.

In the year from October 1, 1887, to October 1, 1888, there occurred in New York three hundred and twenty-one cases of small-pox. These cases occurred in two hundred and twenty-seven houses. Eighty-two of these cases were contracted from exposure to some of the two hundred and thirty-nine original cases, nearly all of which were in their turn traced to direct exposure to other cases, either out of the city or in it. Nine cases could not be traced to their cause. They were probably due to contagion from some mild, unrecognized case, that travelled about spreading the disease. Not one single case of the disease was developed from the clothing or from the rooms in which these cases were, and from which they were removed to the hospital for small-pox. No other precaution was taken in the case of the rooms and clothing than that of fumigation by SO_2, in proportion of three pounds of sulphur to each one thousand cubic feet of air-space for at least two hours. This, however, was done in a most conscientious and careful manner, immediately after the removal of each case.

Again, in the year from October 1, 1888, to October 1, 1889, seven cases of small-pox occurred in five houses. All were traced to their cause, which was found to be direct exposure to a previous case. Not a single case occurred from infection left in the room or clothing by any of these cases.

Occupancy of rooms that have contained small-pox patients was always permitted as soon as they had been fumigated.

In this connection the effect of fumigation by SO_2 upon vaccine virus is interesting. On October 2, 1889, ten quill slips, charged with vaccine virus taken from a lot charged equally from the same animal, were exposed in a room $76 \times 15 \times 8$, to the fumes of one pound of sulphur for two hours. Each slip was then used to vaccinate a child that had never before developed vaccinia. All failed to effect any result. Ten other points from the same lot were effective upon all but one child of ten other primary cases. This child evidently had considerable resistance against vaccinia, as it only took after the third trial.

The same comparison of primary cases with secondary cases, in cases of small-pox, was made of scarlet fever, diphtheria, and measles.

First, scarlet fever. From January 1, 1888, to October 1, 1889, six hundred and twenty-six cases occurred in four hundred and fifty-three houses, and one hundred and thirty-five secondary cases occurred in eighty-seven houses.

Of the one hundred and thirty-five secondary cases, one hundred and six occurred within five weeks of the beginning of the primary cases, to the direct contagion of which they were presumably due. This leaves but twenty-nine cases, out of a total of six hundred and twenty-six, that were possibly due to contagion left in rooms and apartments after disinfection by means of sulphur dioxide after termination of each case.

During the same period (January 1, 1889, to October 1, 1889) five hundred and fifteen cases of diphtheria occurred in three hundred and eighty-two houses, and one hundred and fourteen secondary cases occurred in eighty of these houses. Seventy-nine of the secondary cases occurred within four weeks of the beginning of the primary cases, to the direct contagion of which they were, therefore, presumably due. This leaves only thirty-five cases, out of a total of five hundred and fifteen, that were possibly due to contagion of diphtheria left in rooms and apartments after disinfection by means of sulphur dioxide after the termination of each case.

In the case of measles, five hundred and fifty-seven cases occurred in three hundred and sixty-one houses, and one hundred and sixty-three secondary cases occurred in ninety-five of these houses. One hundred and twenty-two of the secondary cases occurred within five weeks of the beginning of the primary cases, to the direct contagion of which they were, therefore, presumably due. This leaves only forty-one cases, out of a total of five hundred and fifty-seven, that were possibly due to contagion of measles left on the premises after disinfection by means of sulphur dioxide performed after the termination of each case.

These figures are interesting when carefully considered, and they show the relative

efficiency of sulphur dioxide in the case of each of the diseases. The gas is most destructive to the contagion of small-pox, and next, to that of scarlatina.

In the case of measles we have an explanation of the comparatively large number of secondary cases. The disease is a mild one, speaking comparatively, and many cases are not properly isolated in the homes of the poor; consequently rooms and materials are infected outside of the apartment in which the patient belongs and which the disinfector fumigates. Moreover, during the past two years there have been so many cases of contagious diseases that measles have frequently not received the attention of inspectors and disinfectors that should have been given to it, scarlet fever and diphtheria taking most of the time of the men.

The contagion of diphtheria would, from these statistics, seem to resist the action of sulphur dioxide most, and to be the most difficult to destroy. This is due to the manner of its infection. The other three diseases infect a room mainly by means of the medium of the air, the contagion being exhaled or given off from the body and deposited evenly over the surfaces exposed to the infected air. In diphtheria, membranes and secretions are also infected, and the contagion is protected by being surrounded by a protecting medium into which sulphur dioxide cannot easily penetrate. This is probably the reason why biological experiments with SO_2 are not satisfactory.

It is impossible to imitate in the laboratory nature's method of infection. The power of penetration of SO_2 into the culture-mediums cannot be very great. The medium must somewhat protect the culture within it, so that only those cultures are affected that are on the surface of the medium. Just as diphtheritic secretions protect diphtheritic contagion, so do culture-mediums, to a certain extent, protect cultures.

In nature's method of infection the infected air is carried by draughts and air-currents into cracks and corners accessible only to a gas liberated under much the same conditions as the contagion.

Conclusions.—It would seem that the proper and most practical method of disinfection of dwellings, after the occurrence in them of exanthemata and of diphtheria, is by means of sulphur dioxide, and that all clothing, bedding, etc., used in direct contact with the patient, should be removed to a disinfecting station, properly equipped, and there subjected to heat of sufficient intensity to destroy all contagious matter.

In the discussion of this paper by the American Public Health Association the method of fumigation was criticised, it being alleged that not sufficient moisture was present with the sulphur dioxide to insure the best results. A very important point in this connection was brought out. The use of alcohol to ignite the sulphur, as described in the paper, adds materially to the moisture in the air of the infected rooms. The amount of alcohol used is about four ounces to each charge, say six pounds. This amount of alcohol will develop fifty quarts of steam, approximately.

ABRUS PRECATORIA.

At a recent meeting of the Society of Naturalists of Dorpat, PROFESSOR KOBERT (*Wiener Medizinische Blätter*, November 7, 1889) presented an account of a new poison, of an albuminous nature, which he had extracted from the seeds of the *Abrus precatoria*, —a plant already known for hundreds of years. These seeds occur in the form of red bodies, about the size of a pea, with a black spot on them, and are spoken of in the Indies as "chicken eyes," while in Germany they are described as "paternoster-erbsen," from whence the attribute "precatoria" originates. As a remedy, the *Abrus precatoria* seeds have been for a long time employed as irritants and antihemorrhage remedies; in India they are frequently employed for poisoning, while in Brazil they are used in the treatment of ophthalmia. In India the seeds are rubbed up in their fresh condition, and then rolled up into a fine roll, whose sharp point stuck into the skin is sufficient to kill any man or animal, and leaves no more mark than the sting of an insect. It is stated that entire English colonies have been murdered in India in this manner. Professor Kobert has examined the albuminous constituent, and has found that it is one hundred times more poisonous than strychnine, and is similar in its action to the poison which may be extracted from castor-oil seeds. Like all other albuminous poisons, it loses its activity when boiled, and consequently the *Abrus precatoria* seeds may be even used as food. Dr. Kobert has found that death is caused, when this poison is introduced into the blood, through the coagulation of the blood-corpuscles.

HYDRONAPHTHOL AS A SPECIFIC IN THE TREATMENT OF TINEA TONSURANS.

In hydronaphthol DR. MORGAN DOCKRELL (*Lancet*, November 30, 1889) claims that he has found a remedy, which is practically a specific, in combating the ravages of trichophyton fungus in tinea tonsurans, a secondary compound of beta-naphthol, and was obtained from it by Justus Wolf, of New York, by a molecule of hydroxide having displaced an equivalent of hydrogen in the process. It has a slight aromatic taste, is almost odorless, sparingly soluble in water, but easily dissolved in alcohol, ether, chloroform, and glycerin; it is non-poisonous, non-irritant, non-corrosive, according to Mason precipitating albumen and gelatin in their neutral or acidulated solution, on which function is based its antiseptic action, and by it the contents of the protoplasm are caused to congeal, and in a supersaturated solution their destruction is complete; hence its germicidal and prophylactic properties. 15 grains in a single dose have been taken internally without bad effect. In the multiplicity of recommended treatments for tinea tonsurans we have no unanimity in many important particulars, which must materially influence the duration of the disease and the propagation of infection. We have, in fact, as much difference in opinion as to whether epilation should be employed, whether the head ought to be shaved or the hair cut short, as there was in the nomenclature after Willan first described it as "porrigo scutulata," and we do not seem to have got much farther than Willan had in 1810, when he stated that the disease "was hard to cure and very contagious."

Hitherto the failure in the treatment of tinea tonsurans has been due, in the first place, to allowing oxygen too free access to the fungus, acting, in fact, as if we did not know that it is necessary, for a mould fungus to flourish, that it should be abundantly supplied with oxygen, and kept at a temperature below the normal state of the body; secondly, we have not adopted the best means of securing penetration of the remedies employed, and there has been gross neglect in preventing the spread of the disease by using applications which cast a slur on antiseptics; and, lastly, we want a potent germicide which does not set up extensive dermatitis.

Hydronaphthol apparently fulfils the functions of and is superior to corrosive sublimate as a germicide, from the fact that it is non-poisonous and non-irritant. As the best means of applying this remedy, the plasters of hydronaphthol give excellent results, limiting the propagation of the disease, and causing a more rapid penetration of the germicide than any other means that can be applied. The plasters also help in starving the fungus, and to perfect this it is best to hermetically seal the plaster round in the way described below. Have the head completely shaved, leaving the usual fringe all round; then wash with a five per cent. soap of hydronaphthol, using water as hot as can be borne. After drying the scalp, apply over the affected area a ten per cent. plaster of hydronaphthol in narrow strips, letting each strip overlap its fellow, taking care that the plaster extends quite half an inch beyond the margin of the diseased patch. Outside the margin of the plaster paint a layer of a ten per cent. hydronaphthol jelly (when melted) so as to exclude all air. At the end of four days remove the plaster, when the diseased stumps will be found adhering to it. Repeat all the previous process, applying for one week a twenty per cent. plaster. Repeat the process, this time applying the ten per cent. plaster for ten days, when, on removal, the disease will be found to be cured. During the plaster treatment apply a five per cent. ointment to the unaffected portions of the head night and morning. Care should be taken that all articles brought in contact with the head before treatment be destroyed, otherwise reinfection will take place, and the treatment be brought into discredit.

THE LOCAL ACTION OF HELLEBOREIN.

VENTURINI VITTORIO and GASPARINI ELVIDIO, experimenting with a solution of helleborein by instilling a few drops into the conjunctival sac of rabbits (*Deutsche Medizinal Zeitung*, No. 83, 1889), after about fifteen minutes, have induced complete anæsthesia of the cornea to such a degree that it might be strongly irritated with a needle without the animal showing the slightest evidence of any painful sensation. The same experiments were completed upon several dogs,—that is, marked anæsthesia of the cornea, without any alteration in the pupils. A solution was then prepared, of which each drop contained $\frac{1}{125}$ grain of helleborein, and the instillation of 3 or 4 drops of this solution in the conjunctival sac of dogs or rabbits completed anæsthesia in fifteen minutes,

so that the cornea might even be pierced with a needle without the animal apparently feeling it. Half an hour after the commencement of the anæsthesia the cornea reacted and regained its sensibility. In no cases were there any after-effects worthy of mention. From these observations the authors conclude that helleborein is equal to cocaine in producing local anæsthesia of the conjunctiva and cornea, and is to be preferred to it for operative purposes, since its anæsthetic action is confined to the cornea, while the sensibility of the other parts is unaffected. The authors consequently draw the following conclusions from their experiments:

First.—That a very dilute solution of helleborein gives complete anæsthesia of the cornea without causing the slightest irritation. That the anæsthesia so produced is of longer duration than that which may be evoked by cocaine.

Second.—Helleborein produces complete anæsthesia without producing any alteration whatever in any of the ocular tissues.

Third.—It causes no alteration in the pupil or change in intra- and ocular pressure.

Finally, helleborein produces local anæsthesia at any point where it is injected. As it possesses marked toxic action upon the heart, its application in the latter manner must only be employed with the very greatest caution, and is, in fact, in all cases attended by danger.

THE INFLUENCE OF OPIUM AND MORPHINE ON URIC ACID CONSIDERED WITH REFERENCE TO THEIR ACTION IN HEALTH AND DISEASE.

Dr. A. Haig has already called attention to the fact that he believes that morphine causes retention of uric acid, and that the result of this is a fall of arterial tension, the effect being exactly the same, whether the retention is produced by opium, by acids, or other substances. In the *British Medical Journal* for November 30, 1889, he maintains that the effect of morphine on mental depression, and other mental states and conditions, is the result of its action on uric acid and arterial tension, or is, at least, the exact parallel of the action of other drugs which affect the excretion of uric acid and arterial tension in the same way; and that it is thus possible to produce what is practically the same result by several drugs. Dr. Haig believes that the effect of opium and morphine on uric acid and arterial tension explains the good effects that have been observed in uræmia and uræmic and other convulsions. Dr. Haig's position in regard to the action of opium and morphine amounts to this. A large number of drugs, iron, lead, the mineral acids, and their salts, antipyrin (?), nitroglycerin (?), have one effect in common,—namely, that of diminishing the excretion of uric acid in the urine,—that is, driving it out of the blood into the liver, spleen, joints, etc. Exactly coinciding with a fall of pulse tension, and a mental condition of brightness and well-being, uric acid headaches or mental depression, if present, are cured, and in their place comes pricking and shooting pains in the joints, most marked in those who have previously suffered from gouty arthritis. On the other hand, an alkali, as soda or potash, while increasing the excretion of uric acid, produces symptoms which are the exact reverse of those above mentioned. As these drugs have no obvious properties in common, Dr. Haig has inferred that the results which they produce are due to their action on uric acid. Opium and morphine diminish the excretion of uric acid, and at the same time reduce pulse tension, cause mental brightness and well-being, cure a uric-acid headache, and cause at the same time pricking and shooting pains in the joints; they, therefore, belong to the iron, lead, and acid group of drugs, with which their effects exactly correspond, and, as they always cause a marked rise of the acidity of the urine, Dr. Haig concludes that their action on uric acid is the result of their action on acidity.

Further, it has been noticed that morphine is of great value in certain uræmic and puerperal convulsions, which are generally accompanied by a high tension pulse. He suggests that its curative action in these cases is also due to its effect on uric acid, and that further investigation may show that these convulsions, like those of ordinary epilepsy, have a more important relation to the excretion of uric acid and its effect on pulse tension than has hitherto been suspected.

TREATMENT OF SCARLATINAL NEPHRITIS.

In the treatment of nephritis as a consequence of scarlet fever, it should always be remembered that secretory trouble is the consequence of inflammation, and one should never lose sight of the fact that the glands are inflamed, and should be saved as much as possible in the execution of their function.

As a consequence, the organs which are vicarious to the kidneys, should be led to substitute themselves for the latter organs to as high a degree as possible, since, by exciting the secretion of the skin, we may not only remove water, but also the excrementitious matters which are naturally removed by the kidneys. Of all the diaphoretic measures, the one which seems to have been the most satisfactory in the discussion recently held on this subject before the Société Méd. Chirg. de Liége (*La Pratique Médicale*, October 29, 1889) was the warm bath, followed by wrapping in blankets. Ziemssen declared that his long experience has led him to recommend this mode of treatment in the highest terms, especially recommending that the temperature of the baths be gradually increased; a method which is likewise recommended by Liebermeister, who advises that the temperature of the bath should be increased from 105° to 107½°, the duration of the bath lasting from half an hour to an hour, while the patient after each treatment should be wrapped up in blankets until profuse perspiration occurred. It is worthy of note that the application of the hot bath may not produce any marked perspiration until it has been employed for two or three days in succession, while even then, though the effusions are insignificant, on the third day the perspiration will become abundant. In grave cases of nephritis, where there is almost complete anuria, and where dangers of uræmia are present, pilocarpine should be employed in addition to the warm baths; likewise champagne and aërated waters should be given in milk, in a preparation of 1 to 2, while it should be remembered that in all cases of scarlatinal nephritis milk is not only a food but a remedy. In internal treatment, digitalis occupies the first rank, and acetate of potassium, or of ammonium, may be added to it with advantage. During the convalescence, even after albuminuria has disappeared, there should be the greatest care observed not to overexcite the kidneys. The greatest caution should be observed against chilling the surface of the body. Alcohol should be avoided.

THE ADMINISTRATION OF CERTAIN DRUGS BY ELECTRICITY.

At the meeting of the Harveian Society, held November 7, 1889, Dr. Cagney read a paper with the above title, in which he referred to the experiments of Eulenburg, Von Bruns, and Hermann Munk, who had shown that certain drugs can be made to pass through animal tissues between the poles of a galvanic current (*Lancet*, December 21, 1889). He had used iodide of potassium in this way for the cure of labyrinthine deafness and in lead palsy. Only very small doses, however, can be administered through the skin. The method is best adapted for the treatment of diseases of the skin itself or tumors immediately beneath, and of mucous membranes. The indications are those for the local use of iodine and iodide of potassium. In affections of the throat, syphilitic and simple, and especially in chronic pharyngitis, it is very useful. Nodes and gummata in accessible situations seem to yield steadily to it; and this is equally true of tubercular ulcers in the later stages of syphilis, mucous patches, and papular syphilides. Among non-specific affections it serves well in the treatment of indolent ulcer, lupus, and acne, and to promote absorption in enlarged glands of scrofula. Benefit might be expected also in bronchocele and exophthalmic goitre. The method seems to possess certain advantages. By its employment it is possible to administer, in perceptible doses, a drug which is among the most useful we have,—a drug, moreover, which is not readily tolerated by every constitution,—and in a manner which is least likely to disturb the system. It is conveyed directly to the part where its action is needed, and presumably in a nascent state,—that is, a state of maximum activity. Finally, the lesion, if it be due to errors of nutrition,—or if, as in metallic poisoning, it be attended with paralysis,—is at the same time benefited by the stimulating action of the galvanic current. In the application of the method great current strength is not needed. It is current density which is requisite, and the tissues under treatment must be brought directly in the path between the poles. The electrodes may be either sponges holding solution of iodide of potassium, or a modification of Dubois's conducting-tube filled with the fluid. The latter gave the best results in Munk's physiological experiments, and doubtless they are to be preferred where the skin has to be penetrated. They should then be of large size. For the treatment of mucous surfaces an electrode may be made of a glass tube, which can be filled with fluid, having a zinc wire introduced through the bottom, and the mouth (cut to any desired curve) blocked with a fine sponge. This is connected, by means of the zinc wire, with one pole of a galvanic battery. The electrodes should be of large surface area. The fluid should be a saturated solution of iodide

of potassium, and it ought to be applied, where possible, at both poles. Where this is not possible, the solution should be at the negative pole. The current should be passed for ten or fifteen minutes, and its strength will be determined by circumstances. Its direction should be reversed every minute. This is important, and it is one reason why both poles may be charged with advantage. Under suitable conditions the positive pole may be carried by a gold needle, which is plunged in a convenient situation beneath the skin. This expedient serves especially in the treatment of strumous glands, and perhaps of bronchocele. By its means the obstacle arising from the depth or inaccessibility of the part under treatment may sometimes be overcome.

THIOL AND ICHTHIOL.

Thiol, like ichthiol, is a mixture of sulphated hydrocarbons, and possesses a faintly bituminous odor, which is, however, not disagreeable, and has a bitter, astringent taste. In commerce it occurs in two forms,—either in the state of a liquid, which is, in fact, a watery solution of thiol (forty-five per cent.) of syrupy consistence; and the dry thiol, in a fine brown powder, which is entirely soluble in water, and not altering when in suspension in this liquid.

Thiol possesses similar properties to ichthiol, as claimed by Bouzzi (*Gazette Médicale de Paris*, No. 46, 1889), but is equally efficacious in the treatment of various dermatoses, such as seborrhœa, acne vulgaris, acne rosacea, etc.

Dr. Lange is not as favorably disposed towards thiol, and he claims that the comparison between the use of thiol and ichthiol, both through external and internal application, has always terminated to the advantage of the latter. It would thus seem that there are no sufficient reasons for substituting thiol for ichthiol in dermatological practice.

MENTHOL IN ACUTE RHINITIS, INFLUENZA, AND OTHER AFFECTIONS OF THE NOSE AND THROAT.

It may be of value, as claimed by Mr. J. Lennox Browne (*Medical Press*, January 8, 1890), to know that the vapor of menthol checks in a manner hardly less than marvellous acute colds in the head, and is also to be recommended, with a certainty of success if used on its first onset, in arresting or as a preventive of infection in epidemic influenza, and this even for cases in which the nasal symptoms commonly associated with the word influenza are not manifested.

Menthol exerts its action, according to Mr. Browne, in the following manner:

1. It stimulates to contraction the capillary blood-vessels of the passages of the nose and throat, always dilated in the early stages of head cold and of influenza.

2. It arrests sneezing and rhinal flow.

3. It relieves, and indeed dissipates, pain and fulness of the head by its analgesic properties, so well known by its action when applied externally to the brow in cases of *tic douloureux*.

4. It is powerfully germicide and antiseptic. It thus kills the microbe of infection, and prevents its dissemination.

The remedy may be employed by means of a general impregnation of its vapor through a room or house, or locally to the nostrils and air-passages; for both which purposes there are several methods.

a. A ten to twenty per cent. solution of menthol in almond oil, in liquid vaseline, or in one of the many other odorless paraffin compounds, can be sprayed into the nose or throat, or about a room.

b. By placing 20 or 30 grains in an apparatus designed for administering the drug in cases of laryngeal consumption by inhalation, in the form of vapor mingled with steam.

c. By placing a similar amount, or 1 to 2 drachms of the oily solution, in a steam draft inhaler or bronchitis kettle.

d. By the simple arrangement of placing a saucer of water containing a similar quantity of the crystals over a gas-burner in the hall, by means of which the whole house is kept constantly permeated with the drug.

e. But by far the most convenient method for personal use is to carry always the pocket menthol inhaler, which should be used not only on the first approach of an attack, but three or four times a day during an epidemic, and always in cold-catching weather by those subject to head colds.

The instrument consists of a glass cylinder four inches in length, half an inch in diameter, and open at both ends. The tube contains crystals of menthol closely packed and prevented from escape by perforated zinc and cork. The opening at one end is twice the size of the other, the larger being intended for inhalation by the mouth, the smaller for the nostril. The latter is the method which Mr. Browne by preference

recommends. It is not to be simply smelt, but well sniffed or inhaled, so as to cause some tingling or smarting, a sensation which is quickly followed by that of coolness, and openness of the previously "stuffed" and heated nostril.

CACTUS GRANDIFLORUS IN SOME FORMS OF HEART-DISEASE.

In the *British Medical Journal*, January 11, 1890, DR. ORLANDO JONES publishes a paper in which he calls attention to the claim for *Cactus grandiflorus* that it is likely to prove a valuable adjunct to our resources in some diseases of the heart.

The difficulty of finding a remedy for some forms of heart-disease, and the fact, which is more or less recognized, that digitalis, strophanthus, and convallaria, although very valuable, are not always reliable in the varied conditions of the heart with which the physician meets, are sufficient reasons for bringing under notice this new drug. While the beneficial action of digitalis is often most marked where the heart has been overstimulated, as in delirium tremens, its action has often been disappointing when dealing with a feeble heart, especially if that feebleness is excessive and of long duration. Dr. Lauder Brunton has shown that the action of digitalis is divided into three stages. The first stage is that of stimulation of the vagi; the second is sudden depression of the vaso-motor apparatus of the renal arteries; the third is depression of the vagus, exhaustion of the ganglia, weakening of the heart, and, as Dr. Mitchell Bruce wisely puts it, the circulation begins to fail.

With *Cactus grandiflorus* the action seems to be the very opposite,—that is, the final stage of the action of the drug is that it strengthens the heart, and, consequently, the circulation improves, and the final exhibition of this drug is the reverse of that seen in digitalis.

The author maintains that while digitalis appears to be a drug that is most applicable to sthenic or overstimulated conditions of the heart, *Cactus grandiflorus* appears to be applicable to asthenic conditions of the heart.

The first case to which Dr. Jones called attention was that of a youth of about 13 years of age, of strumous diathesis, weedy habit, very feeble, and the heart very weak. Under the steady exhibition of cactus, the heart improved, and the patient grew to be a young man of fairly good health.

The next case was that of a man, aged about 60, who came under treatment, saying he could not continue his work owing to the suffering produced by exertion. He was found to be suffering from mitral disease, accompanied with loud mitral murmur, and was given cactus and ammonia. He so far improved that he was able to resume work, and continued it for some years till he left the neighborhood.

The third case is alluded to as that of a man with feeble heart, liver diseased, and general dropsy, the patient having already been tapped several times before coming under Dr. Jones's care. Under the action of cactus the patient's health is stated to have greatly improved, his heart renewed in strength, and the dropsy almost entirely disappeared.

Cactus grandiflorus attracted some attention a few years ago as a cardiac tonic, but it does not yet seem to have obtained a fixed position. It should receive further study.

THE ACTION OF LOBELINE.

In the *Archiv für Experimentelle Pathologie und Pharmacologie*, 26 Band., Heft 3 and 4, DR. H. DRESER publishes an elaborate pharmacological essay, made in the Laboratory for Experimental Pharmacology in Strasburg, as to the properties of lobeline, obtained from *Lobelia inflata*. The following is an abstract of his results:

Lobeline is the only active principle of *Lobelia inflata*. It is a fixed alkaloid, non-volatile, and in no respects analogous to a glucoside, and which, following certain chemical precautions, may be obtained in the form of a combination with a salt of platinum. One part of this double chloride of platinum and lobeline is crystalline, while the other more considerable part forms an amorphous salt. Both of these salts are endowed with the same pharmacological properties. Warm-blooded animals poisoned by means of lobeline succumb to respiratory paralysis, so it is to be included among the respiratory poisons. In dogs the physiological action of lobeline is first manifested by a paralysis of the voluntary movements and by a concomitant exaggeration of the reflexes. Later these effects are complicated by a paralysis of the motor nerves, analogous to that produced by curare. Through its paralyzing action on the cardiac branch of the pneumogastric, lobeline resembles in its action the nicotine group. In warm-blooded animals the influence of lobe-

line is found in a great exaltation of the respiratory activity. It produces an acceleration of the respiratory movement, which is more persistent when the pneumogastric nerves are intact than when they have been divided. Further, the amplitude of the respiratory movements is increased, and the power of the respiratory muscles appears to be also augmented. Under the influence of comparatively small doses of lobeline the inhibitory influence of the pneumogastric on the heart, as well as its action on the bronchial muscles, is suppressed. The respiratory muscles appear to receive especial stimulation from the respiratory centre when the latter is under the influence of lobeline; as a result, the work accomplished by the heart and respiratory muscles is greatly augmented. In comparison with the other agents which stimulate the respiratory functions, lobeline possesses the advantage over hydrocyanic acid in its freedom from depressing action, while it surpasses aspido-spermine in energy. It therefore seems evident that the employment of lobeline as an antiasthmatic is substantiated by experimental facts, though the author has not made any clinical experiments and offers no suggestions as to the proper form of employment of this alkaloid.

USE OF ATROPINE AS AN ANTAGONIST TO CHLOROFORM.

From the fact that atropine paralyzes the inhibitory nerves of the heart and acts as a stimulant of the respiratory centre, ALBERTONI many years ago recommended the use of atropine in accidents occurring during the use of chloroform as an anæsthetic, or in conditions where the heart was arrested through reflex stimulation of the vagus and paralysis of respiration. He based this advice on his experiments on dogs, which, while, as a rule, highly susceptible to chloroform, were yet able to sustain the administration of immense amounts of chloroform, if atropine was injected subcutaneously before the production of anæsthesia. Caselli and Secondi repeated these experiments in numerous cases of accidents occurring with the use of chloroform, and they now state that they never administer chloroform without having previously given a hypodermic injection of atropine. In the *Centralblatt für Klinische Medicin*, No. 45, 1889, there is an account of a number of experiments made by Dr. L. Vincini in this connection, his results serving to confirm Albertoni's statements, and success only failing to appear when such an immense amount of chloroform was given that there was coagulation of the heart tissue produced. He likewise recommends, in every case of chloroform anæsthesia, as a prophylaxis, the subcutaneous injection of $\frac{1}{33}$ of a grain of atropine. Half the amount may be given to children, while double the dose may be given in an emergency from the use of chloroform.

COMPARATIVE ACTION OF THE NATURAL AND ARTIFICIAL SALICYLIC ACIDS AND THEIR SALTS OF SODIUM.

At the last meeting of the British Medical Association DRS. M. CHATERIS and W. MACLENNAN read a paper as to the general comparative action of the natural and artificial salicylic acids and their salt of sodium, before the Section of Pharmacology and Therapeutics, based on their results obtained from an experimental research (*British Medical Journal*, November 30, 1889).

Their results prove that: 1. Salicin, in a dose of 30 grains, seems to have no injurious influence on the life of a rabbit, but that it diminishes the temperature about 1°. 2. That salicylic acid obtained naturally by oxidation of salicin, or from the oil of winter-green, in 10-grain doses, has also no deleterious effect. 3. That salicylate of sodium obtained from the natural salicylic acid, in 32-grain doses, is not lethal, but that it causes prostration and lowers the temperature.

On the other hand, it is conclusively demonstrated that: 1. Salicylic acid, artificial, in 10-grain doses, causes, first, paralysis of flexors; secondly, death by violent convulsions. 2. Salicylate of sodium, artificially, in 18-grain doses, is lethal; in 4-grain doses it causes paralysis of the hind limbs; in 8-grain doses, circular and rotatory movement, with paresis and dragging of the hind limbs; further, in 12-grain doses, it causes pronounced paralysis of the hind limbs, and marked progressive prostration, and that 18 grains cause not merely paralysis of the hind limbs, but a paralytic condition of the fore limbs, and entire loss of control of muscle movements, and death supervenes in a short time.

The deductions from these experiments indicate that artificial salicylic acid and its salt of sodium are dangerous, and, in large doses, fatal to animals, while salicin, natural salicylic acid, and its salts of sodium are not. Now, on what does this difference depend? Doubtless on some impurity in the artificia

acid, and corroborative evidence, though not yet completed, is afforded by the following letter received from G. G. Henderson, M.A., B.Sc., of the Chemical Laboratory of the University of Glasgow:

"I find, on examination, that the sample of artificial salicylic acid you left with me is not pure, but contains a small quantity of another acid, which I have no doubt is the cause of the appearances observed after the use of artificial salicylic acid. I attribute the presence of this impurity to the fact that the phenol used in preparing salicylic acid synthetically is not pure, but always contains other substances (cresol, etc.), of some one of which the acid found in salicylic acid is probably a derivative. I had not enough of the impurity to make a further examination of it, but it is certainly not salicylic acid. I should add that no trace of this substance is to be found in natural salicylic acid."

After a very careful analysis, Mr. Henderson isolated the impurity referred to. It was in the form of a buff-colored powder, and it was found to be more soluble than salicylic acid; 1 grain of it was dissolved in 20 minims of rectified spirit, and injected into a rabbit weighing six pounds, but without any visible effect. After the expiration of half an hour, 2 grains similarly dissolved were injected, and in ten minutes, and without rotatory movements, the breathing became very rapid, the arteries of the ear were alternately dilated and contracted, and the animal lay prostrate, with its fore and hind legs stretched out. Again, in half an hour, the same quantity—2 grains—was injected, and the prostration became more intense, the respirations lower, and a fine tremor was detected in the muscles of the face. In the course of two hours there was a slow improvement, but never a complete or even partial recovery, and ultimately the rabbit died, after thirty-six hours, being unable during that time to eat anything.

The action of this impurity seems to be of the nature of a slow but certain poison, and the lethal dose is relatively much less than that of salicylic acid. The rabbits in the previous experiments weighed only fourteen ounces, and in this case six pounds, so that the lethal dose would correspond to about 1 grain for a four-pound rabbit.

The obvious conclusions from these experiments are that artificial salicylic acid contains an impurity or impurities, and until this or these can be extracted by the aid of chemistry the internal administration of it or its salt of sodium should be discountenanced. Large and repeated doses of the sodium salt are necessary in the treatment of acute rheumatism, and hence we may account for the restlessness, the confusion, and the delirium sometimes attendant on its use, which have been testified by clinical experience. It is more than probable, too, that the retarded convalescence occurring in some cases of acute rheumatism after the salicylate treatment is due to the great and protracted prostration which the impurity or impurities give rise to. It is to be remembered in connection with these symptoms that prescriptions of the salicylate of sodium are invariably made up, unless otherwise indicated, from the artificial and not the natural salt.

THE TREATMENT OF PHARYNGEAL INFLAMMATIONS BY THE INTERNAL ADMINISTRATION OF SALOL.

In a recent number of the *Annales des Maladies de l'Oreille, du Larynx, du Nez, et du Pharynx*, Dr. Gouguenheim reports twenty-two cases of inflammation of the soft palate, of tonsillitis, simple pharyngitis, and other forms of pharyngitis treated with the most remarkable success by the internal administration of salol in doses of 45 to 60 grains daily in three separate doses. Dr. Gouguenheim acknowledges his indebtedness to Dr. Caport, of Brussels, who first called his attention to the remarkable value of this remedy in the treatment of suppurative tonsillitis, and on this account was led to test its value in various forms of angina. On account of insolubility, the remedy was simply suspended in a mucilage, with directions given to shake it well before using it. The diet was almost exclusively restricted to milk. In all Dr. Gouguenheim's cases there was the most remarkable rapidity observed in the cure of dysphagia, no matter what might have been the cause of the angina; in four cases of severe scarlet fever the same effects were noted. In suppurative tonsillitis, although the results were evident enough to be highly satisfactory, the effects were not as striking as in simple inflammatory affections, though even here the author claims that his success surpasses what was to be expected from any other form of treatment. In some cases the daily dose of 60 grains was exceeded, 90 grains being given in one case where the angina had been complicated by articular rheumatism. In most of the cases there was marked reduction of temperature,

although normal, with reduction in the swelling of the throat, fever, and dysphagia. In the October number of the GAZETTE, on page 701, we alluded shortly to the properties of salol in pharyngitis; but Dr. Gouguenheim's researches are so striking that we thought it would be well to publish the additional details of his cases.

THE ANTIFERMENTATIVE TREATMENT OF INFANTILE DIARRHŒA.

At the meeting of the Harveian Society, held November 7, DR. LUFF read a paper upon the treatment of that variety of acute infantile diarrhœa produced by irritative products, resulting from fermentation produced in milk, either previous to or after ingestion (*Lancet*, December 21, 1889). Dr. Luff, while admitting that though probably several irritating substances resulting from the fermentation of milk are factors in the production of the form of acute infantile diarrhœa under consideration, contended that the principal share of the blame rests with the milk or cheese ptomaïne—tyrotoxicon—produced during the fermentation of milk under certain conditions. The treatment of acute infantile diarrhœa with the view of arresting the abnormal intestinal fermentation was then considered. Carbolic acid, creosote, resorcin, salicylic acid, salicylate of soda, naphthol, and salol have been given in the hope of checking the putrefactive changes in the bowels. Ringer has recommended the administration of a weak solution of bichloride of mercury in infantile diarrhœa attended with very slimy stools. Dr. Luff then referred to Illingworth's antiseptic treatment of infantile diarrhœa, which he had himself found most useful, and the employment of which had first directed his attention to the treatment he had employed. This consists in drug treatment and diet treatment combined. The drug treatment consists in the administration of $\frac{1}{60}$-grain doses of the biniodide of mercury dissolved in iodide of potassium, combined with 1-grain doses of chloral hydrate. It was shown experimentally that the soluble biniodide of mercury is an extremely soluble and diffusible salt, and that it possesses the property of combining with and rendering insoluble the milk ptomaïne,—tyrotoxicon. As regards the diffusibility of the biniodide of mercury, Dr. Luff has detected it in the urine within two hours of its administration. He has never found that the soluble biniodide of mercury itself acts as an intestinal irritant. Of eighty cases of acute infantile diarrhœa treated by this method, the diarrhœa ceased within two days in seventy-two of the cases; in five of the remaining eight cases it ceased within four days, and in no case did it last over seven days.

ESERIDIN.

In the latter part of 1888 Eber discovered in physostigmine, by treatment with iodic acid, a base which was purer and less poisonous than physostigmine. A series of interesting experiments made with eseridin on rabbits, horses, cattle, hogs, dogs, and cats has recently been published (*Deutsche Medizinal Zeitung*, December 9, 1889), of which the following represents the most important results. According to the size of the dose, there is first excitement, then progressive paralysis of the brain and the medulla oblongata, the vomiting and respiratory centres and cardio-inhibitory centre being successively affected. The temperature and voluntary muscles were not affected; while at first there is increase of blood-pressure, coinciding with reduction in the frequency of the pulse, later the conditions as regards the circulation are exactly reversed. From irritation of the pneumogastric centre there is marked increase of the peristalsis of the stomach and the intestine, accompanied by at first normal and subsequently watery discharges, with evidences of nausea or even actual vomiting. The excretion of eseridin in the intestine produces direct irritation of the nerve plexus of the bowels, and so leads to peristalsis and secretion of mucus. As a consequence of the results so portrayed, Dr. Eber recommends the employment of eseridin, and especially in veterinary practice, as a stimulant to the stomach and intestine and to the brain and spinal cord. It is free from the cumulative action of strychnine. The doses which he employed for a horse were about 1½ grains, for a cow 3 grains, while the dogs and cats received about $\frac{1}{4}$ of a grain for every two pounds of body weight. It is further added that the remedy is contra-indicated in all diseases of the brain or spinal cord, as well as in any parenchymatous disturbance of the heart.

Ostertag (*Berlin. Tierarztl. Wochenschr.*, Jhrg. 4 and 5, Nos. 40 and 43) has likewise tested eseridin in horses and cattle, and has found that smaller doses than 3 to 4 grains, although producing increased peristalsis in these animals, in none did it produce diar-

rhæa, though Eber claims to have produced diarrhœa in the horse with 1½ grains. The employment of larger doses, such as 7½ to 8 grains, produced marked salivation, coughing, and disturbance of the circulatory organs, as well as symptoms of slight colic. Diarrhœa was produced in horses by a dose of 7½ grains, as compared with 12 grains of physostigmine required to produce the same effect; while, on the other hand, in cattle 9 grains were required as contrasted with 1½ grains of physostigmine.

A NEW THEORY OF DIABETES.

The theories in regard to the pathology of diabetes may be reduced to two. In one it is claimed that the glucose of the blood is not as completely consumed as in the normal state, and the feeling of chilliness experienced by diabetics is a fact which seems to substantiate this view. According to the other theory, it is supposed that the excess of glucose in the blood bears an exaggerated relationship to the sugar coming from the foods, thus constituting simple alimentary diabetes, which disappears with proper attention to the alimentation; or else it may be due to the superabundant production of hepatic sugar. The latter view offers an explanation of so-called nervous diabetes, in which antipyrin and opium will so often prove successful. Each of these two theories appears to be based upon a certain amount of truth, but they are both insufficient, since they will not explain all cases, especially of the so-called pancreatic diabetes. This species of diabetes, discovered by Lancereaux, is accompanied by complete atrophy of the pancreas, and only recently Von Mering has shown, as we have already alluded to in the GAZETTE, that complete ablation of the pancreas in the dog is followed by a more or less intense diabetes mellitus. It would seem, however, that this form of diabetes is not due to the interference with the entrance of the pancreatic juice into the intestine; for if only a fragment of the pancreas, even if separated from its duct, is preserved in connection with the solar plexus, the diabetes does not appear. Von Mering has offered no explanation of this fact; but in the *Lyon Médicale* for December 29, 1889, DR. LÉPINE suggests two possible hypotheses. In the first place, one may suppose that in the normal state a part of the pancreatic ferment is reabsorbed, and contributes to the destruction of glycogen, a supposition which is supported by the known action of the diastatic ferment of the pancreas. The following hypotheses, though less admissible, yet deserve consideration. It is well known that the contact of diastase with starch does not result in the formation of glucose, but of maltose. The diastatic ferments of the saliva and of the pancreatic juice, in contact with glycogen, furnish a sugar which is likewise identical with maltose. Mering is, however, of the belief that maltose, after contact with the pancreatic ferment, becomes converted into glucose. It results from these facts that the transformation of glycogen into glucose is much more complicated than is generally supposed, and requires the presence of the pancreatic ferment. If this ferment should be wanting, the hepatic sugar will not be normal glucose, but will be some other form of sugar which will not be capable of appropriation by the economy, but which will be eliminated by the kidney. Thus, in the normal state of health, the pancreas and the liver are both associated in the preparation of normal glucose. Whichever of these theories be adopted, pancreatic diabetes will, nevertheless, be a consequence of the failure of the pancreatic ferment, and diabetes will thus result from a relative reduction of the ferment in relation to the quantity of carbohydrates which are to be destroyed. Dr. Lépine promises in a subsequent communication to offer some new facts as to the demonstration of these theories, with their application to therapeutics.

PEREIRINE AS AN ADJUVANT TO QUININE IN MALARIA.

It is well known that in certain cases of malaria quinine seems to fail of its specific effect; the dose is steadily increased without any apparent effect on the disease, but frequently with only too obvious results on the heart and nervous system. The depression thus caused intensifies the adynamic condition caused by the fever, and the patient finally dies of exhaustion from what a poetical pathologist has called "febrile autophagism." In such cases digitalis combined with quinine is often useful, but, according to DR. F. TIBIRIÇÁ, pereirine (an extract of *Pao pereira* bark) meets the indications far more satisfactorily. He says it doubles the therapeutic activity of quinine, while at the same time preventing the untoward effects frequently produced when the drug is pushed. Pereirine, according to Dr. Tibiriçá, has no

depressant action on the heart, and, as he somewhat epigrammatically sums up the case, "ten decigrammes of quinine with ten decigrammes of pereirine are equal (in malaria) to twenty decigrammes of quinine," without the disadvantages of such a dose of the latter drug. He relates the case of an old woman, of 80, suffering from organic disease of the heart, and reduced almost to the last extremity of exhaustion by intermittent fever; quinine in considerable doses had no effect, but the temperature was brought down almost at once to the normal standard, and the appetite and strength speedily returned when pereirine was combined with the quinine. In several other cases Dr. Tibiriçá found the same plan of treatment equally successful.—*London Medical Recorder*, November 20, 1889.

THE ANTISEPSIS OF THE RENAL PASSAGES BY THE INTERNAL USE OF SALOL.

In the intestinal tube, as a consequence of the action of the pancreatic juice, salol splits up into carbolic and salicylic acids, which are then eliminated by the kidneys, carbolic acid without being changed, salicylic acid after combining with sodium. Investigations by Nencki, Sahli, and Lépine have proved the truth of this statement beyond contradiction, and these writers have, as a consequence, recommended its internal use in "internal disinfection" in cholera, typhoid fever, and other bacterial diseases. Dr. Dreyfuss (*Wiener Medizinische Blätter*, December 19, 1889), bearing these facts in mind, has recommended its use internally as a means of inducing the passage of an antiseptic fluid through the kidneys, ureters, bladder, and urethra; and claims that it acts in a much more intensive manner and covers a wider field than can be accomplished through the injection of antiseptic fluid. Sahli further has shown that the urine of patients who have taken salol internally is aseptic, and that salol in large doses is well borne and never produces toxic symptoms. It is, therefore, quite as suitable for producing antisepsis in the urinary passages as naphthol is for the antisepsis of the intestinal tract. Dreyfuss has employed salol, either alone or in composition with various balsamics, in blennorrhœa, the full dose varying from 75 to 120 grains. Even in acute cases, treated at the very outset, this mode of treatment rapidly diminished the secretion, and in some few cases arrested it within a few days. Its effects are especially marked in combination with the use of cubebs or copaiba.

Finally, Dreyfuss recommends this use of salol in operations upon the urinary organs, for in this way the urine is kept aseptic, and one source of danger is thus avoided.

PHENYL URETHAN.

Phenyl urethan is the name given to a substance obtained through the action of chloride of ethyl on aniline, which occurs in the form of a white powder; it is crystalline, insoluble in water and freely soluble in alcohol. The substance was introduced by Professor Giacomini in the Turin Academy of Medicine, where he stated that he had employed it as an antipyretic in seventy different cases suffering from various febrile affections.

His results, which are published in the *Journal de Médecine de Paris* for December 15, 1889, are as follows:

He found that phenyl urethan possessed marked antipyretic and analgesic properties, while at the same time exercising a beneficial influence on the general system. A dose of 7½ grains is said to be equal to 15 grains of antipyrin, and is capable of producing a fall of temperature of from two to five degrees, which may be maintained for from four to eight hours. The fall of temperature occurs within twenty to forty minutes after the administration of the drug, and is accompanied by no disagreeable after-effects. In acute articular rheumatism it is said to reduce pain and swelling. As an analgesic its results do not seem to have been such a success. In some cases it produced a favorable result, in others it was ineffective. The form recommended for its administration is as a solution in sherry wine, which is said to prevent collapse, cyanosis, and other unpleasant symptoms.

THE ADMINISTRATION OF PREPARATIONS OF IODINE AND BROMINE THROUGH THE RECTUM.

In the *Therapeutische Monatshefte* for November, 1889, Professor Köbener publishes an important paper as to the various indications and results which may be expected from the administration of salts of iodine and bromine by the rectum. He has employed this mode of medication for two separate purposes,—either in the treatment of local affections of the rectum or as a

means of treating constitutional conditions. The use of suppositories of iodide of potassium in the treatment of chronic inflammation of the prostate gland is by no means novel, though in many cases the pain produced by the friction, recommended by Schleiss, who introduced this process, is so severe as to prevent the proper performance of the operation.

Professor Köbener claims that the irritating effects of a solid suppository, even though combined with belladonna, may be largely overcome, and the desired effect obtained with greater certainty, through the employment of enemata of solutions of potassium iodide; or, in cases of chronic induration of the prostate, after a few days of the application of the iodide of potassium, pure tincture of iodine may be substituted for it with advantage, after gradually increasing the strength of the iodide of potassium solution from one and one-half per cent. solution up to thirty per cent., combined with an equal amount of potassium bromide. Of the pure tincture of iodine, 3 drops may be given at first for from three to six days, and the quantity then increased until each enema contains about 10 drops of the tincture, an amount which he found might be safely given. He found that this mode of treatment reduced the swelling and inflammation of the prostate gland, and decreased the catarrhal secretion of this gland and reduced vesical tenesmus. Even in cases of neglected inflammation of the prostate, the regular use of such enemata through a series of weeks served to produce great improvement in the condition. In syphilitic ulcers of the rectum, as well as in catarrh of the rectal mucous membrane after the use of astringent enemata, injections of solutions of iodide of potassium often proved of the greatest value. That iodide of potassium so administered is rapidly absorbed is proved by its speedy appearance in the saliva and urine of patients so treated. This observation thus shows that iodide of potassium may be administered through the rectum in cases where it is desired to affect constitutional conditions.

YELLOW OXIDE OF MERCURY SUBCUTANEOUSLY ADMINISTERED.

Dr. Chernoguboff has made a number of observations in the Miasnitski Hospital in Moscow in regard to the subcutaneous injections of the yellow oxide of mercury in connection with the treatment of syphilis, and has come to the following conclusions: 2-grain doses cause a quicker disappearance of all symptoms than smaller doses, reducing in ninety-two per cent. of cases the necessity for professional visits to one or two. In fresh cases an interval of ten or eleven days between the injections is sufficient to prevent salivation, but old cases require a longer interval. The injection should be made into the cellular tissue, and not into the muscles, to avoid the great pain in the case of the latter, and the frequent occurrence of abscesses. The treatment is said to cut short all symptoms, both when the disease is progressing and when it is on the decline; new spots, especially on the mucous membrane, are very rare. In tertiary syphilis, according to Dr. Chernoguboff, early gummata, and those which are breaking down, quickly disappear under the treatment; but in impetigo and rupia, iodide of potassium is often required in addition. Local applications do not usually accelerate a cure, except in sore-throat with papular infiltration of the tonsils, which requires heroic treatment. Relapse occurs, as in other methods, after two or four months. Men and women equally bear well large doses; children from 12 to 14 years require 1 grain only. The treatment is contraindicated in severe anæmia which has not been caused by the specific disease, in general exhaustion, undoubted alcoholism, chronic inflammation of parenchymatous organs, and in extensive dental caries; pregnancy is not a contraindication. Mercury is found in the urine in from four to eight hours after the injection. —*Lancet*, October 12, 1889.

TREATMENT OF MEDICAL EMERGENCIES.

The surgical emergency has been the subject of numerous addresses and papers, but the medical emergency has rarely, if ever, received systematic consideration. Yet the instances in which it demands treatment are scarcely less numerous than in the case of the former.

In the *University Medical Magazine* for January, 1890, Professor Tyson contributes a valuable paper as to the treatment of the more frequent medical emergencies, of which the following abstract represents the most important points:

Under the head of the treatment of medical emergencies, Dr. Tyson refers to the treatment of—*first*, syncope, or fainting; *second*, the apoplectic seizure; *third*, the con-

vulsion, whether caused by epilepsy, Bright's disease, peripheral irritation, or hysteria; *fourth*, lung hemorrhage; *fifth*, nasal hemorrhage; *sixth*, gastric and intestinal hemorrhage; and, *seventh*, asphyxia or suffocation.

1. In fainting, the heart does not cease to beat, unless it be fatal syncope, but its action becomes so feeble, and the quantity of blood sent out so small, that there is not enough sent to the brain to maintain consciousness.

The symptoms of fainting are, of course, familiar to every one. In the treatment of syncope, the first step is to place the patient in a recumbent position flat on the back, with the head low. The clothing should be loosened around the neck and body, the access of fresh air should be freely permitted, and to this end persons should be kept at a distance. Diffusible stimulants, as aromatic spirits of ammonia, and brandy or whiskey, should be administered, or strong ammonia may be inhaled. Cold water may be dashed in the face, the respiration being thus excited and in turn the heart caused to beat. If recovery ensue, the heart's beat becomes more distinct, the pulse reappears at the wrist, and consciousness slowly returns. It is only in cases where the heart is too badly damaged, as where there is fatty metamorphosis of its muscular fasciculi, or its valves are badly diseased, or where too much blood is drawn off, that resuscitation fails to take place.

2. The apoplectic seizure is a more dangerous condition. Accompanied, like fainting, by unconsciousness as an essential symptom, it is due to a very different cause. There is here too much blood in the brain, either within or without the blood-vessels. In treating it the patient requires to be bolstered up, the head high, and the blood kept out of the brain as much as possible. In the true apoplectic seizure, with even a moderately strong pulse, blood is to be taken from the arm freely, sixteen ounces or more. Simultaneously an aperient, which in the absence of consciousness must be one of which the dose is small, as 1/6 of a grain of elaterium in pill or powder, or a couple of drops of croton oil in a teaspoonful of sweet oil or glycerin. A large enema, to which an ounce of turpentine is added, is useful. Ice to the head—an ice-cap—may be of use. Of less service is counter-irritation to the nape of the neck or the temple by a blister.

3. There is no symptom more alarming than the convulsion. Beginning with a distortion of countenance, due to clonic muscular contraction of the face muscles, which rapidly invades the entire voluntary system, and is as promptly followed by unconsciousness, the victim mostly falls heavily to the floor, although he is sometimes warned by an aura which permits him to seek a place of safety. Serious injury and even death may be caused by the fall itself.

In treatment, the first steps are measures to prevent the biting of the tongue, which is, unfortunately, often too early a result to be averted, being caused by a primary and sudden closure of the jaw muscles. A piece of wood, a clothes-pin, or a cork secured so as to prevent its being swallowed, or a towel thrust into the mouth will answer the purpose. Then the patient's clothing is to be loosened, as in fainting, and he is to be restrained from such motion as may result in further injuring himself.

If the convulsion be due to epilepsy, nothing further can be done; if due to reflex irritation, as occurs in teething in children, or an overloaded stomach, the gums should be lanced in the former instance, and vomiting secured in the latter. The difficulty is to introduce the emetic; but irritation of the fauces by the fingers or a feather will frequently have the desired effect. Should the fit continue, a movement of the bowels should be brought about by an enema. In all cases in children, immediately after the cessation of the fit, if the bowels have not been moved during it, an aperient should be given to remove irritating matter in the alimentary canal, since this may avert a recurrence. Among such irritating matter are to be included the various intestinal worms.

If the convulsions are due to Bright's disease, a more active treatment is necessary. If it be puerperal nephritis, in addition to the measures taken to protect the tongue, the first step is undoubtedly to bleed from the arm, and, if the convulsions continue, chloroform should be inhaled. The same effect is often as well obtained by chloral.

Chloral is best administered by enema, and 60 grains may be thus given to an adult. If the convulsion is due to Bright's disease not occurring in pregnancy, a 1/4 of a grain of pilocarpine may be injected subcutaneously, and repeated in a few minutes if not followed by sweating; or, if this be not at hand, a hot-air bath or a steam bath.

Hysterical convulsion requires a different treatment. It is always less sudden than the epileptiform convulsion, is apt to be preceded by some premonitory symptom, such as a sense

of suffocation or extreme nervousness, but there is never any danger of the patient biting the tongue. Opisthotonos is usually the characteristic form of convulsion. As regards treatment, electricity in the shape of the direct galvanic current, occasionally interrupted, or of faradization, is, however, often felt, and will generally cause the convulsion to cease. Douching the patient with cold water will likewise be usually successful.

[Inhalations of nitrite of amyl will usually arrest convulsions, no matter what be their nature, though its use in puerperal convulsions after delivery may prove dangerous by producing flooding.—Ed.]

4. Pulmonary hemorrhages are in the main confined to tubercular consumption, occur in two different stages of the disease, and have a very different significance. They may occur early, when the blood-vessels in the neighborhood of a tubercular infiltration, weakened by a tubercular deposit in their walls, yield to a distention from collateral hyperæmia. In such a case the hemorrhage is rarely large, and, so far from being harmful, is often a relief to a congestion producing dyspnœa and oppression. The greatest danger is the irritation and even inflammation which may be brought about by the presence of small coagula in the bronchioles and their insufflation into still pervious air vesicles. This danger escaped, the hemorrhage is harmless.

The second form of hemorrhage is much more serious. It occurs late in the disease, and is due to ulceration through the coats of a blood-vessel of considerable size, the vessel being either in the walls of a cavity or traversing it. Such a hemorrhage is dangerous, and not infrequently fatal. Prompt measures are, therefore, to be taken to relieve it. The thorax should be kept raised, and absolute quiet should be observed. This is further secured by a full dose of an opiate, if it be well borne by the patient. Of internal remedies, the time-honored one of common salt is of uncertain value; but, in the absence of anything else, may be swallowed, in the dose of a teaspoonful, repeated in a few minutes if the hemorrhage continues. Gallic acid, in 15-grain doses every ten or fifteen minutes, is a more rational measure, and should be substituted for the salt as soon as it can be obtained. Hypodermic injections of ergotin, in doses of 5 to 10 grains in water, may be given simultaneously, and should be repeated daily or twice daily where the tendency to hemorrhage continues. Their object is to bring about contraction in the blood-vessels. Other astringents, such as acetate of lead, in 3-grain doses, may be used under the same circumstances, as it would not be safe to use this drug in any quantity sufficient to bring about an immediate effect. The application of cold over the bleeding site is especially recommended by German clinicians, but one must be sure first of the situation, which is not always easily ascertained. Sometimes the patient is able to indicate it quite precisely, at others not. Sometimes auscultation may discover subcrepitation over the seat of hemorrhage. Cold should be applied in the shape of ice, in bladders or rubber-bags, so that the clothing shall not become damp, or of cloths wrung out in cold water. A more extreme measure, to be resorted to when others fail, is to throw a ligature around the larger limbs, cutting off the return of blood by the veins, while the outflow through the arteries is still permitted. Such a course will withdraw blood from the lungs and lessen the tendency to hemorrhage.

5. Hemorrhage of the stomach and bowels occurs usually in cirrhosis of the liver or typhoid fever. When treatment is required, tannic acid, in doses of 15 grains every ten or fifteen minutes, may be used, though even alum may be used, in the proportion of a teaspoonful to a glass of water, and taken in four doses, at short intervals.

Hemorrhages from the lower bowel, occurring frequently in typhoid fever, are much more serious. They are to be treated by quiet, cold compresses, or ice-bags, to the abdomen, and the use of foods of the most bland and unirritating nature. Tannic acid may be given as in hemorrhage from the stomach, large doses being much more apt to enter the bowels.

6. Nasal hemorrhage may be readily treated by snuffing up cold water, or a solution of alum in water, or injecting hot water into the nasal passages, and the use of ice externally. Of course, plugging the nares must be practised when all else fails.

7. The successful treatment of asphyxia depends upon the fact that the heart continues to beat long after respiration ceases, and upon this fact, too, depends the wonderful capacity for resuscitation which exists in those apparently drowned or otherwise apparently dead from suffocation. The first indication is, of course, to supply oxygen, the want of which is responsible for all the symptoms. If there is obstruction of the air-passages by a foreign body, it must be

removed, or tracheotomy must be performed. If the action of the muscles of respiration is interfered with, the interfering cause must be removed. If the patient is in an atmosphere of scanty oxygen or of irrespirable gases, he must be removed to fresh open air. In slighter degrees of asphyxia, such as are seen in the new-born infant, slapping the face with the bare hand or with a wet towel, or dashing cold water upon it, will often have the effect of exciting the breathing act and of aërating the blood. If these measures are insufficient, then artificial respiration must be practised by some one of the usual methods, as that of Sylvester or Marshall Hall. In apparent drowning, faradization or galvanism of the phrenic nerve may be used, especially one pole being placed over the nerve as it crosses the scalenus muscle at the root of the neck, and the other at the epigastrium.

THE INJECTION TREATMENT OF ACUTE GONORRHŒA.

Dr. Friedheim, writing from Neisser's clinic upon the above subject, in the *Archiv für Dermat. und Syph.*, No. 4, 1889 (*Journal of Cutaneous and Venereal Diseases*, January, 1890), gives the results of a series of experiments carried out to determine the relative destructive powers possessed by a great variety of different local remedies against the gonococcus, as well as their influence upon the inflammatory condition, and their efficacy in causing desquamation of the urethral epithelium, and through the latter a mechanical elimination of the microbes. In twenty-nine cases corrosive sublimate was employed (1–10,000 to 1–15,000). In fourteen, treatment had to be intermitted because of the pain, difficult urination, bloody urine, œdema, or other ill effect, while in eleven instances this treatment had to be stopped altogether. In a second series of twenty-nine cases, injections of 1–20,000 were used without necessitating any interruption, though some pain was caused by them. An addition of salt in a tenfold quantity caused a decrease in the irritant symptoms, but at the same time in the antibacterial effect. In the first series the gonococci were decidedly influenced in ten out of the fifteen cases in which treatment was continued, while in the second twenty-nine cases this influence was noted sixteen times.

As regards the rapidity of antibacterial effect, no remedy produced more rapid destruction of gonococci superficially situated than 1–30,000 sublimate solution, which caused their disappearance from the secretion, in many cases, after four days' treatment, and often after a week they remained absent. In weak solutions this remedy acts as an astringent, and in strong solutions as a caustic, and only produces desquamation where irritation enough has been set up to produce shedding of a whole layer of epithelium.

In another series of twenty-nine cases the salicylate of mercury (1 in 270) was tried, and gave twenty-two positive results, so far as antibacterial effect was concerned, and was found but slightly irritating. Its action is somewhat slower than the sublimate, but more sure and lasting. Zinc, lead, and tannin were employed in a large number of cases without any positive antibacterial results.

Bismuth subnitrate and salicylate, in from one-half to ten per cent., were employed in twenty-six instances, with six positive antibacterial results.

Permanganate of potassium (1–3000 to 1–5000), tested in seventeen cases, showed also six times a decided influence upon the gonococci. In stronger concentration an unpleasant irritative action was noted. The discharge was rendered decidedly thinner, and the number of pus-corpuscles was decreased, but no great desquamation of epithelium was observed.

Resorcin, in from two to four per cent. solution, in twenty-two cases, was found to have no great antibacterial or desquamative influence, but was exceptionally well borne.

Salicylate of sodium (five to twenty per cent.), in twenty-six cases, showed slight effect on the gonococci, with only five positive results.

Antipyrin (three to six per cent.), in twenty cases, was found to exert but little influence on the cocci, giving but three positive results. Boric acid was equally devoid of antibacterial power.

Naphthol (1–1000 to 1–100), in twenty cases, showed but two results favorable to this drug as a destroyer of the gonococci. Carbolized lime-water (acid. carbol., 1; aq. calc., aq. dest., āā 50) gave four positive out of twelve trials, and, though without marked antibacterial virtues, was, however, found to be astringent and productive of marked desquamation.

Thallin sulphate was used, in five per cent. solution, sixteen times, with three antibacterial results, and in seven per cent. suspen-

sion ten times, with five successful results. The tartrate of equal strength, in eleven cases, each gave two positive results for the weaker and six for the stronger solution.

And now we come to the most important portion of the paper,—that relating to the observation upon *nitrate of silver* injections, which have for a number of years been used in Neisser's clinic. Three hundred and eighteen cases were treated with this salt; examination showed that in two hundred and thirty-seven of them an antibacterial effect was produced, and the failures were attributed to inattention on the part of the patients, who were treated in dispensary practice, etc.

Nitrate of silver increases the inflammation when used in strong concentration, but when in proper dilution decreases it, and at the same time a decrease is noted in the number of gonococci. In the Neisser clinic the treatment of acute gonorrhœa is begun at once with injections of silver, in concentration of 1–4000, or, at most, 1–2000, and, in spite of all attempts to find a better remedy, there must be accorded to this one the undisputed first place, even ahead of corrosive sublimate. In the first few days the discharge becomes richer, thicker, and more purulent, but after about four days the secretion becomes less, thinner, whiter, and contains more epithelium. The gonococci decrease materially in quantity, and may in a few days more disappear completely. The injections are made four to six times daily at first, and gradually decreased to one per diem, and this is best to continue for several weeks. In some individuals even weak injections (1–5000) will not be well borne, and boric or antipyrin injections will have to be made before or after the silver, sitz baths and suppositories used, or the drug be given up entirely. In case of complications arising, the use of local remedies is not stopped at this clinic, as is usually the case, but antiparasitic injections are continued, especially in epididymitis. Complications are prevented in a measure, it is believed, by the antibacterial methods of treatment. Thus, it is seen, that out of twelve hundred cases of gonorrhœa, epididymitis was present but one hundred and sixty-four times, funiculitis being noted in twenty-seven instances. Twenty-two times only did the epididymitis appear during treatment, and only once did it develop in the whole number of cases treated by nitrate of silver injections. In the remaining one hundred and forty two cases the complications were present before treatment was begun. Other complications, such as bubo, prostatitis, cystitis, etc., if present at all, were so prior to treatment.

Microscopical control is imperative in carrying out this therapy in a rational manner.

PATHOLOGY OF DUODENITIS AFTER BURNS.

At the meeting of the Pathological Society of London, held January 7, 1890, Dr. Hunter read a communication on the "Pathology of Duodenitis after Burns" (*Lancet*, January 11, 1890). After referring to Mr. Curling's observations, made in 1842 in a paper read before the Royal Medical and Chirurgical Society, in which he recorded ten cases of ulceration of the duodenum after burns, he said that there had come to be a widespread belief in the existence of some connection between injury to the skin and affection of the duodenum, but up to the present time no satisfactory explanation of its nature had been given. Mr. Curling's view that the ulceration of the duodenum resulted from the augmented action of Brunner's glands did not rest on any physiological basis, and the same remark applied to the theory of Drs. Brown-Séquard and Handfield Jones that the lesion was due to sympathetic disturbance. Reports from Dr. Wilks, at Guy's Hospital, and from Mr. Macarthy, at the London Hospital, were valuable in showing the rarity of duodenal ulceration after burns. The object of the present communication was to show that a connection existed between duodenal lesion and burns, and to give a reasonable explanation of its nature. The results of certain experiments on dogs were recorded, and they were obtained in the course of other investigations involving the study of the behavior of certain poisons on the blood and the channels of their elimination from the body. The drug employed was toluylendiamin; it was administered subcutaneously in doses of from .3 to .5 gramme, and the animals were killed from three to seven days later. The fact established by these observations was that the most intense duodenitis might be set up by the excretion of irritant products through the bile. This would explain not only duodenitis after burns, but also other allied conditions. A dog killed seven days after the subcutaneous injection of .5 gramme of toluylendiamin, the administration being repeated on the fourth day, showed a normal empty stom-

ach, while the duodenum for a distance of eight inches from the pylorus presented the most marked evidences of inflammatory change; the lumen of the gut being filled with clear mucus derived from the inflamed area. The congestion was greatest in the neighborhood of the openings of the bile-ducts, and gradually faded away from that point downward. The whole intestinal mucous membrane was somewhat swollen, and presented patchy congestion. In another experiment, in which the animal was killed three days after the administration of .3 gramme, there was, in addition to inflammatory congestion, what seemed to be commencing ulceration; but it was found that no actual loss of tissue had occurred, these spots being simply follicular tissue with considerable swelling of the mucous membrane around their margins. In this case there was also much injection of the lower portion of the ileum, which appeared to be due to stagnation of bile-stained fluid in this position. Other experiments gave similar results. In all the cases the only channels by which the poison reached the intestine was through the bile, but whether it was the drug itself which produced the lesion or some products of its own disintegration or of its action on the tissues was not at present determined. The duodenitis thus produced experimentally strikingly resembled that met with experimentally after burns, there being in both inflammatory congestion of the mucous membrane, with or without ulceration, or an appearance like it. The congestion would probably usually pass off in the course of a few days, its longest duration being about seven; while an ulcer formed during this period would be prevented from healing, and later (probably in about two or three weeks) would cause death by eating through the intestinal coats and opening one of the branches of the pancreatico-duodenal artery. Of the tissue changes produced by extensive burns, or the products of those changes, almost nothing was known; but changes in the blood-corpuscles had been frequently observed, and hæmoglobinuria had been often noticed; this, though doubtless in part due to the high temperature, was more directly owing to the action of the products formed from the disintegration of the burnt tissues. To complete the parallel drawn between the action of the products thrown into the blood after burns and toluylendiamin, it was only necessary to add that one of the most marked properties possessed by the latter drug was its power of inducing destruction of the red blood-corpuscles. Though it was necessary to be careful in transferring the results obtained from experiments on animals directly to the case of man, yet it was impossible to overlook the striking resemblance between the lesions induced in the duodenum and the action on the blood in the two sets of cases; and the logical conclusion followed that the cause of the duodenitis of burns, as of the duodenitis of toluylendiamin poisoning, was the excretion of substances irritant in their action through the bile.

THE ANTISEPTIC PROPERTIES OF LIME.

According to the Paris correspondent of the *New York Medical Record* (January 4, 1890), Drs. Richard and Chantemesse have made a series of experiments, published in the *Revue d'Hygiène*, relative to the antiseptic properties attributed to lime against the typhoidic bacillus and the cholera bacillus. According to these experiments, a solution of lime of the consistence of milk possesses properties superior to those of the chloride of lime and of corrosive sublimate, in the proportion in which they are habitually employed. The authors have disinfected fæcal matters with this solution of lime, but only fæcal matters in a liquid form can be so treated. When it is necessary to disinfect a cesspool in which the dejections of typhoid, choleraic, or dysenteric patients have been emptied, it is sufficient to pour a solution of lime into the cesspool. If the matters in it are in a state of putrefaction, it would be necessary to wait until, in the first instance, the ammonia which the lime displaces from its saline combinations be disengaged, and in the next, until a portion of the lime be thus lost by disinfection. The liquid should be stirred with a wooden stick in order to facilitate the escape of the ammonia, and to render the mixture homogeneous.

PAPAIN IN EAR-DISEASES.

Papain has been very considerably employed to remove the false membrane in diphtheria, while various writers have recommended it as a dressing in syphilitic and other ulcers, and it has been employed with some success for cleansing the recesses of the middle ear after mastoid operations. It occurred to Dr. R. McKenzie Johnston (*Edinburgh Medical Journal*, January, 1890) that it might be of use in chronic suppuration of the

middle ear. In such affections pain is a certain indication that the secretion is not getting away very freely, a condition which may be due either to the smallness of the perforation, the viscidity of the pulse, or caking of cholesterin or wax. It is well known that if these conditions are neglected that the retained septic pus may lead to an extension of disease, possibly necessitating an operation for mastoid abscess or even for cerebral abscess. It is evident that anything that can insure the cleansing of the middle ear, and that can readily dissolve hard masses of *débris*, etc., must of necessity decrease the risk of these serious consequences. Dr. Johnston states that he has used papain in a number of cases where syringing was insufficient to accomplish the desired result, and in all cases his experience has been most satisfactory. His method of employing the drug is to drop 15 minims of a five per cent. solution into the ear, care being taken that it reaches the bottom of the meatus. If necessary, the patient should be made to swallow while holding the nose, so as to draw the fluid into the middle ear. After allowing it to remain an hour, the ear is syringed out, and care taken to prevent the development of bacteria by the use of boracic acid. This plan of treatment seems to be especially suitable where there is a long-standing case, and only a little thin and very foul smelling discharge, probably associated with some diseased bone. It also may be used successfully where there is no perforation, but where a firm plug of wax and epithelium has caked together, and could not be dislodged by syringing. Dr. Johnston states that at first he used the papain in simple solution, either in water or camphor-water, but afterwards he was inclined to think it acted better with the addition of some soda, so he now uses five grains of the bicarbonate of sodium to the half ounce of papain solution.

TRACHEAL INJECTIONS IN PNEUMONIA.

At the meeting of the Société de Biologie, held January 4, 1890, M. PIGNOL stated that he had made use of solutions of naphthol, in the proportion of 2 parts to 1000 of water, injecting about 8 ounces of this solution into the trachea at one sitting (*La Tribune Médicale*, January 9, 1890). He also claims that these injections are perfectly well tolerated, that immediately after their employment the patients appreciate a diminution in the dyspnœa, and in one case there was marked reduction of the fever, while there is always evidence of an improvement in the physical condition of the lungs. His method of employment is to puncture the trachea by means of the needle of the hypodermic syringe, and then allow the solution of naphthol to flow through this needle drop by drop for half an hour.

In the discussion which took place after the reading of this paper, M. DUVAL called attention to the fact that Cl. Bernard had noted the extreme power possessed by the trachea in absorbing drugs, and that he had made use of this mucous membrane for administering the sulphate of quinine.

M. GELLÉ called attention to the fact that laryngologists made use of the power of absorption possessed by the larynx in the administration of the oil of menthol.

ALUM ENEMATA IN DYSENTERY.

In the *Lancet* for January 11, 1890, DR. HENRY F. NORBURY publishes a case of a seaman, aged 31, who had contracted dysentery abroad three years and a half previously, and since that time had never enjoyed his usual health. He had frequently suffered from tormina, had from three to ten loose offensive stools daily, accompanied by much tenesmus and by occasional passages of blood, and he had gradually become feeble and emaciated. During this long period he had frequently been under treatment, but with only slight benefit. He was unable to continue his duties on board ship, and had to return to England, when he came under Dr. Norbury's observation. His appetite was bad, his tongue foul; he passed, amid much straining, from three to eight loose, frothy, offensive motions daily, sometimes containing blood; but, although griping pains were often very distressing, there was neither tympanites nor abdominal tenderness. He was carefully dieted, and among the drugs prescribed for a long period were compound ipecacuanha powder, aromatic sulphuric acid, decoction of hæmatoxylon, lead pill with opium, compound kino powder, chlorodyne, sulphate of copper pill with opium, and liquor ferri pernitratis, besides enemata of opium, of nitrate of silver, and of sulphate of zinc, and suppositories of tannin, but he seemed to derive no benefit whatever from any of the

above. Lastly, an enemata was prescribed containing half an ounce of alum in ten ounces of water, to be administered night and morning. It produced slight sweating at first, but the effect in a couple of days was remarkable; the stools were reduced to one or two daily, and shortly became of natural consistence. This treatment was continued for eighteen days, when the patient expressed himself as feeling better than he had done for years; he had also gained considerably in weight and looked robust. He was kept under observation for some days after the enemata were stopped, to ascertain if there would be any return of his complaint, but as there was none he resumed his ordinary avocations.

CHLORIDE OF SODIUM IN FACIAL NEURALGIA.

In the *Edinburgh Medical Journal* for January, 1890, Mr. George Leslie claims that nearly every case of facial neuralgia, toothache, and earache, as well as neuralgic headaches, may be cured by the application of powdered chloride of sodium, common table-salt, to the nasal mucous membrane. The salt may be used by the patient as a snuff, a pinch being taken into the nostrils of the affected side, or it may be applied by means of the insufflator. If we examine the list of cases which Mr. Leslie reports, three of supra-orbital neuralgia, five of toothache, three of facial neuralgia, three of nervous headache, one of neuralgia following herpes, one of neuralgia accompanying glossitis, cephalalgia accompanying tonsillitis, and one of bronchial asthma, it would appear that chloride of sodium possesses unsuspected properties as a universal panacea. We are naturally inclined to be sceptical as to the properties of a remedy for which so much is claimed, though it is possible that there may be a good deal of truth in Mr. Leslie's claims for common salt.

SACCHARIN IN CYSTITIS.

It was recently stated that a writer in the *New York Medical Record* had found the administration of saccharin extremely useful in correcting the offensive odor of ammoniacal urine. The affection is so distressing, often embittering the last years of life, that it will be interesting to draw attention to a similar observation, but of earlier date, which was published by Dr. James Little, of Dublin, in the *Transactions of the Royal Academy of Medicine in Ireland.* The paper was read in April, 1888, more than a year before the note appeared in our esteemed American contemporary. Dr. Little's cases are so interesting that they may be quoted. The first was that of an old lady, aged 80, with purulent ammoniacal urine; she had passed phosphatic calculi, and the bladder probably contained many others, but the patient refused any surgical interference beyond the occasional introduction of a soft catheter and the washing out of the bladder by the lady who acted as nurse. "Quinine and boric acid," Dr. Little continues, "when taken in fair doses, always purified the urine, but about three months ago her stomach became so irritable that these drugs could not be borne, and the washing out of the bladder by a weak warm sublimate solution could no longer be practised, as the passage of the catheter had become exquisitely painful. The consequence was that the urine became so offensive that the odor met one on the stairs, and the patient's attendants had often to leave the room to avoid being sick. In this difficulty it occurred to me to try saccharin. I directed six of the tabloids to be used daily. In three or four days the urine was no longer offensive. The patient has continued their use ever since, and the urine has not again become ammoniacal, though there is little, if any, diminution in the quantity of contained pus. Since the foregoing case came under my observation, I have had four other opportunities of observing the effect of saccharin in patients who were passing ammoniacal urine. They were all males: one a case of catarrh of the bladder, in a paraplegic gentleman; one a case of chronic cystitis, with enlarged prostate; and two cases, in which there had existed stricture of the urethra, but in which, although a surgeon had successfully dilated the stricture, the urine remained ammoniacal. In all these cases the saccharin was distinctly useful, but in all its administration had been combined with the daily use, by the patient himself, of a catheter, so as to prevent the accumulation of residual urine in the bladder,—a precaution without which no drug will, I think, prevent decomposition of the urine."—*British Medical Journal*, January 11, 1890.

Reviews.

WOOD'S MEDICAL AND SURGICAL MONOGRAPHS. Vol. III., No. 3. Published monthly. September, 1889. New York: William Wood & Co., 1889.

This number contains five monographs. The first, on "Congestive Neurasthenia, or Nerve Depression," by E. G. Whittle, M.D., is a plea for blood-letting, as a means of cure, in a class of cases which, to the modern medical mind, are far from suggesting such an agent. Forced-feeding, massage, rest, these are the means which are now employed in neurasthenic cases, and the author cites many cases to show that they correspond to the neurasthenic type in all important particulars. Nevertheless, he discriminates from the mass of such cases, many which he considers as fit for his peculiar plan, and draws blood by leeches with, as his cited cases show, the most remarkable and permanent results. True, a relapse follows often the first withdrawal of blood, but a repetition of the remedy once or more times will secure a lasting cure. While many readers may be sceptical, it seems to us that the author's advice is worth trying.

"The Art of Embalming," by Benj. Ward Richardson, M.D., is a very interesting paper, and is an epitome of general information on the subject. It is simple, but practical, and any medical man, by following its directions, can embalm, if emergency require, well enough for all ordinary purposes.

"The Etiology, Diagnosis, and Treatment of Phthisis," by Dr. H. von Ziemssen, gives us another valuable study of a disease, which, from its wide prevalence, its steady mortality, and from our newly-discovered partial knowledge, is of intense interest to the physician, since we have seemed for some time past to be, perhaps, on the very verge of further discovery which may modify entirely our treatment and its results.

Dr. C. Lloyd Tuckey's monograph on "Psycho-Therapeutics; or, Treatment by Hypnotism," will prove welcome to the many who are just now experiencing a renewed interest in the subject. How long it has taken to arouse this interest is a surprising matter to the thinker. But by no means so surprising as the subject itself, which, as the reader will find out if he peruse Dr. Tuckey's work, has now been brought into a better shape than ever before, thanks to the quiet but continuous labors of Charcot, Braid, Tiebault, and others. How far behind the rest of the world we are in this matter may be shown by the author's statement that in Holland "in every large town it (psycho-therapeutics) is followed by at least one well-qualified practitioner." In fact, the field opened by recent research seems in some directions almost boundless, and it is time that more attention was paid to it in America. The author's statistics, giving the general results of hypnotization, will be a surprise to those not familiar with recent observation. Of the patients submitted to hypnotization by Dr. Tiebault in 1880, out of one thousand and fourteen in all, only twenty-seven failed to be influenced, while the remainder succumbed more or less completely. Children and adults were equally susceptible, as another table shows; in fact, under 14 years, all the patients submitted were influenced. And these numbers hold equally good in the practice of others, and in towns not so exclusively "pervaded by an atmosphere of hypnotism and suggestion" as Nancy.

The author's most interesting chapter, however, deals with suggestion and post-hypnotic suggestion, for by these means are attained the many cures claimed by hypnotism. Here the field seems boundless in its possibilities. If we are to believe enthusiastic advocates, all the badness of humanity is to be changed; the root of evil is struck. "Out of the heart proceed," the sacred book tells us, all our crimes, and by hypnotic suggestion the fountain is cleansed, and the hypnotized are told hereafter to "think only the thing which is good." The inebriate is told to loathe alcohol, and he loathes it when awakened, and, we are led to believe, for a long time afterwards. Whether the liar will loathe lying, and the impure become virtuous, we wait to learn. For a numerous class of cases we conceive the suggestion to be of vast value,—viz., those weak-nerved people who are forever irritated and jarred by the unavoidable things in life. The dwellers on the lines of elevated roads can be hypnotized, and told that hereafter the rumble of the passing train will be to him as sweet music. The unfortunate who dwells next to a stamping-mill will be able to enjoy the hammering, and in a coming age, a doubtful monarch, if there be any monarchs, will be submitted to the suggestions of the wisest and most virtuous hypnotizer of the realm before ascending the throne. Yet, seriously, humanity instinctively shrinks back appalled at the whole matter, for where hereafter is the bold, determined ego,—the man himself with his

firm will and consequent responsibilities,—if these things be true? Where is moral responsibility, and where the struggle to do right, and its reward when successful, where the elevation and building up of character, if by a sleep it is all gone, and we think other people's thoughts and follow without reasoning, or resistance another's suggestion? That there is some character left one observer shows us, for he says that subjects often strenuously object to doing things that they think wrong, but they do them; and, lastly, from a theological point of view, if we can so easily put good suggestions, let us say, into a previously evil mind, why has not an all-powerful Creator done the same for us, and saved us from crime and sin and its consequent misery? In fact, the subject of hypnotism in all its bearings is too fast for contemplation. Yet its actuality is so great that we are forced to study it, and utilize it to the utmost of our ability, and how far it has been utilized, and to what good purpose in the treatment of disease, may be learned from the pages of Dr. Tuckey's monograph.

The last article in this volume is on "Sexual Activity, and the Critical Period in Man and Woman," by Dr. Louis de Séré. In this article the author tries to prove that the "change of life" is just as real in man as in woman, though it occurs some years later. He has made out quite a strong case, and has collected numerous valuable observations, and from them has drawn some very useful deductions. E. W. W.

THE EVIL THAT HAS BEEN SAID OF DOCTORS. Extracts from early writers. Collated from "Le Mal Qu'on a dit des Medecus" of Dr. S. J. Witkoski. Translated, with annotations, by T. C. Minor, M.D. Cincinnati: Reprint from *Lancet-Clinic*, 1889.

These be "extracts." But who knows what dreadful sayings of the past the translator has wisely left unextracted, and what good purpose, we would ask, is served by the extracts given us? Who would like all the evil things ever said about him by any one, anywhere, all collected and presented for his perusal? The reading might be salutary, but how bitter. Since, however, the translator has thought good to bring these "evil things" to our notice, and evidently intends us to consider the extracts he makes as representative of all the evil things ever collected, we have read them, and can only say that the task was disagreeable. The wit that pointed what it considered as envenomed shafts at our noble profession was a very poor, stale wit. The same old jokes—mostly excrementitious—seem to have reappeared in every age. The same very small idea of what the profession was and is seems to have always existed, and we think, yes, are sure, that we could say much more evil-pointed and true things about the profession ourselves, if we chose. So, perhaps, antiquity has let us off easily after all, if only antiquity could have had a cleaner tongue and pen.

E. W. W.

LECTURES ON OBSTETRIC NURSING. Delivered at the Training-School for Nurses of the Philadelphia Hospital by Theophilus Parvin, M.D., Professor of Obstetrics and Diseases of Women and Children at Jefferson Medical College, etc.
Philadelphia: P. Blakiston, Son & Co., 1889.

In the blinding Sahara of manuals the tired reader will rest and be refreshed when he comes to this one, albeit it be small and unpretentious, and there lie around him a hundred larger, weightier, and more labored ones,—manuals of obstetric nursing which reveal the whole science and art to its most recent discovery. Here at last the nurse who seeks to know her business, and not some other business, can read and mark and inwardly digest. Trained by such lectures, she may thrive and grow and burst into modest bloom, where on the weightier pabulum so often offered her she wastes and withers, or is forced into some strange exotic growth, which ill-befits the modest flower she should be. Here is just enough knowledge to make her wise in her station; just enough antisepsis taught to make her safe for herself and her clients; just enough lying-in-room tradition to show that she follows the calling of the wise woman; and yet she will be no blind believer in old tradition, for she will learn at least that nipples cannot be made more elastic by the longest course of alum and brandy. Many other things, too, she may learn which will never bring her knowledge in conflict with the physician,—viz., that the Spartan infants were washed in wine, and that some early Christians—Anglican—were baptized in the same generous fluid. She will also, when her patient seems to be suffering intensely, console herself by the story of the heroic Roman wife, who gave "no whisper of a groan" lest she should reveal her husband's hiding-place. She can also recall at such a moment the endurance of the Lacedæmonian boys, who suffered foxes to tear their bowels in grim silence. She will also retain, if of naturally retentive memory, such Latin phrases as "In Hoc Signo Vinco," and others

which she will meet with in these pages. She will know of Pascal's remark concerning the nose of Cleopatra, and can memorize some choice lines of old English poetry for her solace, if she be plain of feature. She will know enough to thank heaven that she was not by unhappy misplacement a *garde d'accouchées* of the eighteenth century in Paris, but only a faithful, modest, and well-trained nurse in these United States towards the close of the nineteenth century. Art, to a certain extent, will be familiar to her ear, if not her eye. With Lucretius and Ruskin, Milton, Sir Walter Scott, Robert Burns, and Dante she will possess some slight familiarity, not enough to breed contempt. And even such classic names as Æschylus and Sophocles will not excite in the future any unmannerly surprise, nor will her breath be perfumed with onions and whiskey, or her gown untidy; in short, if she follows Dr. Parvin's admonitions and instructions she will be a very desirable nurse. E. W. W.

A HAND-BOOK OF PATHOLOGICAL ANATOMY AND HISTOLOGY. By Francis Delafield, M.D., and T. Mitchell Prudden, M.D. Third edition.
New York: William Wood & Co., 1889.

In considering the volume before us, the evident, as well as expressed, aim of the authors to produce a thoroughly *practical* book must be distinctly borne in mind; that a very gratifying share of success has attended their efforts is evidenced by an appreciation necessitating the appearance of a third edition. To those whose early medical training was completed before the doctrines and methods of modern pathology received the careful attention and consideration that our medical schools are now beginning to so justly accord them, this hand-book is especially useful, since the information it contains is precisely that most needed by those who propose to become personally acquainted with practical pathology.

The book is divided into four parts. The first part relates to autopsies and to the preservation of tissues. Taking up the several regions of the body, the examination of the organs is concisely described, and many little expedients, so valuable in overcoming unexpected difficulties, are suggested. An excellent feature of this section is the explicit directions for preserving tissues for microscopical examination, which follow the consideration of each organ. While always selecting the simplest method promising good results, the authors do not hesitate to insist on the use of the less common and more expensive reagents when necessary for really satisfactory work. If the evident, but so seldom fully appreciated, importance of placing tissues at once, and with little handling, into an adequate quantity of preserving fluid could be impressed upon every young pathologist, the loss of not a few interesting specimens would be avoided.

Passing to the second part,—embracing the pathology of the blood, degenerations, animal and vegetal parasites, inflammation, and tumors,—one naturally turns to the pages devoted to that subject which has assumed such importance during the last few years,—the bacteria. The morphology of the three cardinal types is sketched and illustrated by a number of well-known forms, following which the main features of the technique of bacterial investigation are indicated. In view of the aim of the book,—to offer efficient aid to those isolated students to whom personal instruction is often inaccessible,—it seems desirable that the directions for work in this important field should have included more of the minutiæ as to the manipulations, and especially that the most frequent sources of failure and their remedies should have been added. In this relation, however, it must be admitted, as the authors observe, "It is wiser for one purposing to carry on bacterial researches to gain a practical acquaintance with methods and apparatus in a well-appointed laboratory than to attempt to work out the methods from books." Again, "A large experience in this sort of manipulation is necessary before reliable results can be obtained in original investigation, since the slightest error or carelessness in manipulation, or failure to observe the occurrence of contamination, is likely to entirely vitiate the results of long series of experiments," is a truth that cannot be too strongly emphasized, a due appreciation of which would lighten an already heavily-laden literature of a burden of misleading contributions.

Part III.—treating of the morbid anatomy of the organs—occupies, naturally, the greater portion of the book, and contains many admirable drawings of diseased tissues.

The fourth and final part includes the lesions found in general diseases, in poisoning and in violent deaths, and presents a striking contrast to the pathology of ten years ago in the presentation of the pathogenic bacteria. The microbes found in connection with typhoid fever, relapsing fever, diphtheria, cholera, tuberculosis, erysipelas, pyæmia, anthrax, and leprosy are figured, to which are added sketches of the plasmodium malariæ.

While concise of necessity, from the vast field covered by the work, the matter presented is systematically arranged, and contains the salient points of the subjects discussed, while the frequent bibliographical references indicate the sources for further and fuller information for those especially interested. The illustrations form another pleasing feature; to meet over two hundred illustrations drawn by the author is, indeed, a refreshing experience. What some of the figures, notably those colored, may lack in artistic merit, is more than offset by the many admirable representations of pathological conditions, and by the thoroughly conscientious endeavors of the authors to represent nature rather than to produce a pretty book.

The authors have wisely contented themselves with giving only reliable and thoroughly tried technical methods, refraining from presenting an array of formulæ which only confuse and distract the beginner when left to his own choice. While having little sympathy with those epitomes in which all life and interest are squeezed out in the condensation of bare facts, the present book merits much praise. Without undertaking to supplant the larger exhaustive treatises, it is doing a good missionary work for pathology by enlisting the interest of men who would never turn from their busy routine to read the more pretentious volumes.

ON DISORDERED DIGESTION AND DYSPEPSIA. By Frank Woodbury, A.M., M.D., etc.
Detroit, Mich.: Geo. S. Davis, 1889.

This is another of the Leisure Library Series, and will be found very readable and instructive, especially the section on gastric fermentation, acetic, butyric, etc., and its relief, since these cases are always presenting themselves, and furnish the great army of hypochondriacs with the largest and most persistent recruits. E. W. W.

PHYSICIAN'S LEISURE LIBRARY. THE MODERN TREATMENT OF DISEASES OF THE KIDNEY. By Professor Dujardin-Beaumetz. Translated from the fifth French edition by E. P. Hurd, M.D.
Detroit, Mich.: Geo. S. Davis, 1888.

Though this little work has been for some time before the public, it will not be amiss to again call attention to the series of which it is a valuable member. Perhaps, for its price, it represents more in readability, clearness, modern views, and general therapeutic value than any book of the kind easily accessible. The most hardened routinest in practice will find points of value which are novel to him, and the book is so comprehensive that one learns from its perusal a definite scheme of kidney-disease and its treatment, which is more than can be claimed for more expensive and elaborate monographs on the subject.

E. W. W.

Correspondence.

PARIS.

(From our Special Correspondent.)

The End of Influenza—Elder-Bark a Mild Emeto-Cathartic—What becomes of Alkaloids in Seeds?—Calomel outside and Iodides inside Incompatible—Urobilin a Symptom of Hepatic Lesion—A Medico-Legal Museum.

Influenza has come and gone,—or nearly so,—after doing in a short time considerable damage. When the epidemic first appeared the faculty made light of it, even the Academy of Medicine assuring the population that the visitation would be a harmless one, comparatively. Only one member, Dr. Ollivier, raised his voice in warning, but he was not heeded, some say because he is given to croaking. And now the supposed inoffensive "grippe" turns out to have been in Paris worse than either of the three cholera epidemics of 1854, 1865, and 1884. As a consolation, Parisians are told it is not the influenza that kills, but its sequelæ, such as bronchitis, pneumonia, and other lung affections. "Many thanks," they reply, "and much good it is to us!" At the same time they took kindly to the disease, merely calling it by the Anglo-Italian term, "influenza," instead of the French name, *grippe;* but there was no excitement or panic and no stampede, such as occurred in 1884, at the time of the last very mild cholera epidemic, which shows that sometimes there is much in a name. America, we have been informed, has also been sorely tried by the unwelcome visitor, not long after us, and consequently knows how it is herself. For one thing, there also an interchange of names has taken place, American papers apparently preferring the term grippe to influenza. Well, there is no harm. The first word is said to be of Germanic origin,* and anyway makes good Anglo-Saxon. Only it is a barbarism to say, as the New York *World* recently did, "Monsieur la

* Some, however, give it a Latin etymology,—namely, *corripere*, gripper, to grip.

Grippe." Give her the madame by all means! Although the disease may have been unpleasantly familiar on your side of the Atlantic, yet it may be instructive, if only to compare notes, to relate what the experience has been in this city, especially as the data have been carefully collected, and, as a rule, differ but little from what occurred in other parts of the country. The following observations have been made. As regards age, children were scarcely affected, while for persons from 20 to 60 years the deaths numbered three times the average, and over 60 years only twice. Both sexes have not fared alike, more adult males having died than females, in the proportion of 772 to 415 during the last week of December. The ratio is said to have been reversed near the end, but men will remain in the majority. Wealth has conferred no privilege; mortality has been the same for the rich and the poor. Only the army in actual service has enjoyed remarkable immunity. Now, to scan the immediate causes of death. During the last week of December only 22 cases were credited to influenza proper, while 742 were charged to inflammatory diseases of the respiratory organs, against 207 during the same period the year previous. Pneumonia, the most deadly, 346 against 67 (21 only in summer); bronchopneumonia, 138, instead of 64 (10 in summer); acute bronchitis, 132, against 60; chronic bronchitis, 127 to 46; and phthisis, 421 to 206. The last carried off 286 males and 135 females, or more than twice as many men as women. Finally, Dr. Loewenberg, a well-known specialist for ear-diseases, has reported a considerable increase of inflammatory affections consequent upon influenza, the most common form being the classical acute middle otitis. Considering the easy transmission of catarrhal affections from the nose to the Eustachian tube, and even the drum, no one will wonder at the spread of ear-diseases. None, however, proved fatal, and all, as a rule, were easily amenable to treatment. Yet the circumstance was worthy of mention. To complete the review, during the first week of January the total number of deaths rose to 2683 (1470 males and 1213 females), and in the second week decreased to 2065 (1121 males and 944 females), against 2374 during the last week of December. The mortality during the same period a year since was as follows: December, 1888, fifty-second week, 1033; January, 1889, first and second week, 970 and 1114. The increase, a large one, it must be admitted, was solely due to the influenza sequelæ already alluded to. The treatment recommended by Dr. Dujardin-Beaumetz and other physicians, and generally found beneficial, has been quinine, in doses of 8 to 16 grains a day; also exalgine and analgesine (antipyrin) in usual doses. Many patients, after taking antipyrin, suffered from a variety of eruptions and rashes, that may have resulted from either the disease or the medicine. Bronchial and pulmonary affections were treated as such, but quinine was almost invariably added to the ordinary therapeutic agents. An amusing sign of the times is that all the advertised medicines which were last summer sure to cure typhoid and bowel complaints now turn out to be, from peppermint to cathartics, infallible remedies for influenza.

While many new drugs are added to the materia medica, it is not desirable that the older and safer ones should be suffered to pass into oblivion. Drs. Combemale and Dubiquet, of Lille, have been recently taking up again elder-bark, *Sambucus nigra*, with a view to ascertain whether it really possesses the properties spoken of by former writers on therapeutics. The fresh bark was used exclusively, and the result of their investigations upon animals, carried on with the precautions usual to modern physiologists, has been that, although the whole bark is far from inert, the inner is more active than the outside bark, and a cold maceration of the fresh drug will operate differently from the decoction. With the outside bark, or smaller quantities of the inner, exhausted by decoction, only diuretic effects are obtained. A cold maceration of the inner bark, on the contrary, in the dose of 3 grammes (45 grs.) per kilogramme (2 lbs.) body weight, will, after thirty minutes, cause easy and painless vomitings and copious catharsis, without straining or griping. Their conclusion is that, owing to its gentle action and the absence of unpleasant after-effects, elder-bark is clearly indicated in infantile practice.

What becomes of alkaloids in seeds during their germination is an interesting question, which Professor Ed. Heckel, of Nancy, has partly elucidated in a memoir presented this month to the Academy of Sciences. The alkaloids, or active principles, experimented with were caffeine, eserine, strychnine, and daturine. For caffeine, kola-seeds were clearly preferable to coffee. The green bean was found to contain 2.37 per cent. of caffeine. After one year the cotyledons, much enlarged, had only 1.072 per cent.; .70 after two years; and .21 after three years. Chloro-

phyll and potassium nitrate, never present in the unsprouted bean, now replaced caffeine. As regards nux vomica and stramonium seeds, the decomposition was more speedy, from two to six months being sufficient for all alkaloids to have disappeared. The same remark applies to calabar-bean. M. Heckel's conclusion is that, most likely, alkaloids and active principles are for plants a store of reserve food. On the other hand, they do not act as ordinary nitrogeneous manure, for, some fifteen years since, O. Reveil showed that when plants are watered with solutions of their own alkaloids, far from striving, they are soon killed and disappear.

Dr. Cordier, of the Lyons Antiquaille Hospital, has observed several instances of the incompatibility between local applications of calomel and iodides administered inwardly. The following typical case deserves to be related. A patient suffering from tertiary chancres on the prepuce came to consult him, and was prescribed iodide of potassium solution in 4 or 5 grammes (45 or 60 grs.) daily doses. The next day the man returned in a sore plight, his penis being much tumefied, very painful, and affected with phimosis and a purulent discharge. With a hydrocele syringe a subpreputial injection was administered, whereupon a greenish-yellow powder was noted to come out, mixed in with the pus. At once the idea struck Dr. Cordier that calomel had been used locally, and such proved to be the case, the former medical attendant having mistaken the lesions for primary chancres. Under the influence of the soluble iodides voided in the urine the calomel had turned to mercurous iodo-chloride, a compound possessing marked caustic properties. Simple cooling and emollient lotions soon allayed the soreness and irritation. A similar, but less severe, case greatly puzzled a brother physician, who came to consult Dr. Cordier in regard to a patient, 60 years of age, affected in a like manner. Copious washings with a borated lotion proved efficient in this instance. From a number of such cases it was found that as little as 8 grains of potassium iodide is sufficient to bring on the formation of iodo-chloride, and cause the patient much inconvenience. But, of course, a certain conformation of the prepuce is necessary.

According to Dr. Hayem, the steady presence of urobilin in urine is an unfailing sign of a liver affection. It is customary to examine the water for albumen, urea, uric acid, etc., all of which have a meaning in kidney disorders. But with a new patient it is quite as important to look for urobilin, as it will indicate liver-troubles long before any other symptom will. Hence its value in a class of complaints too often unsuspected until it is nearly too late for a successful treatment. It should be borne in mind that it is not the quantity of urobilin, but its constant and prolonged presence, which has pathological importance, and indicates either commencing alcoholic cirrhosis or hepatic lesions from other causes. Another caution is that, as pure urobilin only possesses a weak coloring power, it may be found in notable proportions in light-colored urines. [A process for detecting urobilin was given in the THERAPEUTIC GAZETTE of January, 1889, page 56.]

A museum of legal medicine is among the projects now contemplated. Dr. Brouardel and Judge Guillot, of the Paris Medico-Legal Society, who are the promoters, recalled at a recent meeting that Lyons, thanks to Dr. Lacassagne's efforts, has been for several years provided with a collection of the sort, which is found exceedingly useful in difficult cases. The city of Vienna, Dr. Horteloup remarked, has also a very good medico-legal museum, containing, among other specimens, a unique collection of hymen membranes, serving as points of comparison in cases of rape. A committee has been appointed to consider the question, and bring the project to a practical issue.

PARIS, January 22, 1890.

Notes and Queries.

INCOMPATIBILITY IN PRESCRIPTIONS.

At the meeting of the Pharmaceutical Society, held December 17, 1889, MR. JOS. W. ENGLAND, of Philadelphia, read a paper on "Incompatibility in Prescriptions," of which the following is an abstract of the more important points of practical value to the physician (*American Journal of Pharmacy*). In the first place, it is highly desirable to have information as to the solubilities of different salts. The following statements apply to the agents most frequently used:

Acetates are soluble.

Arseniates are insoluble, except those of the alkali metals.

Arsenites are insoluble, except those of the alkali metals.

Bromides are soluble, except mercurous and silver; those of antimony and bismuth are decomposed by water to form oxysalts.

Carbonates are insoluble, except those of the alkali metals.

Chlorides are soluble, except those of lead (*s*), mercurous, and silver.

Citrates are soluble, except those of manganese, mercurous, silver, and strontium, aluminum (*s*), barium (*s*), bismuth (*s*), cadmium (*s*), calcium (*s*), lead (*s*), zinc (*s*).

Cyanides are insoluble, except the mercuric, and those of the alkaline metals and earths.

Hydrates are insoluble, except those of barium, strontium, calcium (*s*), lead (*s*), and the alkali metals.

Iodides are soluble, except those of antimony, bismuth, gold, lead (*s*), mercuric, mercurous, platinum (*s*), and silver.

Nitrates are soluble.

Oxalates are insoluble, except those of antimony (*s*), chromium, ferric (*s*), ferrous (*s*), stannic, and the alkali metals.

Oxides are insoluble, except those of barium, strontium, calcium (*s*), and the alkaline metals.

Phosphates (ortho) are insoluble, except those of the alkali metals.

Sulphates are soluble, except those of barium, strontium, calcium (*s*), antimony, lead, mercurous (*s*), and silver (*s*).

Sulphides are insoluble, except those of barium, calcium (*s*), strontium, and the alkali metals.

Sulphites are soluble, except those of aluminum, antimony, barium, calcium (*s*), cobalt (*s*), copper, ferrous (*s*), lead, manganese (*s*), nickel (*s*), silver, stannous, strontium, and zinc (*s*).

Tartrates are soluble, except those of antimony, barium, bismuth, cadmium (*s*), calcium (*s*), copper, ferrous (*s*), lead, manganese (*s*), mercuric, mercurous, nickel (*s*), silver, strontium (*s*), and zinc (*s*).

Acids decompose hydrates, carbonates, and acid carbonates to form salts; the stronger acids, which are largely inorganic, set free the weaker acids, which are largely organic, or, brought in contact with alcohol or alcoholic solutions, form ethers; alkaline hydrates, carbonates, and acid carbonates neutralize free acids, decompose some glucosides, and precipitate all alkaloids, some of which precipitates are soluble in excess of the precipitant, or in alcohol, if that liquid be present in sufficient amount to dissolve them.

Oxidizing agents, such as nitric, hydrochloric, nitrohydrochloric, picric, and chromic acids, and potassium bichromate and permanganate, with readily oxidizable substances, such as carbohydrates, alcohols, ethers, sulphur, phosphorus, sulphides, and organic matter in general, form explosive compounds. Potassium permanganate, if ordered in pill form, can best be made with cacao-butter, and cosmoline in very small quantity, and enclosed in gelatin capsule. Silver nitrate is reduced by organic matter to oxide, with the exception, it is said, of opium and extract of hyoscyamus. A very good way of making pills of it is with cacao butter and cosmoline, etc., as mentioned above, under potassium permanganate; syrup of ferrous iodide and potassium chlorate form a poisonous compound; and potassium iodide and potassium chlorate form a mixture which yields the poisonous iodate on being taken internally.

Iodine and the iodides yield precipitates with the alkaloids; bromides precipitate morphine and strychnine salts on standing, but a few drops of dilute hydrochloric acid added, after the addition of the alkaloid, prevents the change. Sodium biborate precipitates morphine and cocaine salts; but, on the addition of a small quantity of boric acid, or with boric acid alone, precipitation does not take place. Mercuric chloride, with acidulated solutions of the alkaloids, forms crystalline double salts; potassium-mercuric iodide precipitates alkaloidal solutions. Solutions of quinine salts, with those of the alkaline acetates, or with Basham's mixture, precipitate the sparingly soluble quinine acetate. Morphine solutions give the phenol reaction, if mixed with tincture of ferric chloride.

Glucosides are decomposed by free acids and precipitated by tannin; tannic and gallic acids precipitate alkaloids, albumen, gelatin, and the majority of metallic salts, and yield inks with iron solutions.

Resinous tinctures and fluid extracts, prescribed with aqueous solutions, should always be emulsified with acacia; tinctures and fluid extracts made of stronger alcohol, mixed with those made of diluted alcohol, become turbid and precipitate, since the special solvent power of alcohol, or of water, for a substance diminishes in proportion to the quantity of the other liquid present. A "shake" label should always be used.

When for internal use, fixed and volatile oils and oleo-resins, and aqueous solutions, should always be emulsified, whether ordered or not, and, to better emulsify the volatile oils, they should have mixed with them, prior to emulsification, an equal volume of olive, almond, or cotton-seed oil.

Tincture of ferric chloride gelatinizes mucilage of acacia; free acids separate insoluble carminic acids from compound tincture of cardamom; free acids precipitate glycyrrhizin from fluid extract of licorice.

Commercial spirits of nitrous ether liberates iodine from solutions of iodides, decomposes antipyrin solutions to form a green nitro-derivative, and precipitates mucilage of acacia; but, if it be well diluted with water, it can usually be added last without precipitating. Tincture of guaiac and spirits of nitrous ether are stated to be pharmaceutically incompatible by Potter (although they are often prescribed together), likewise infusion of wild cherry with compound infusion of gentian, infusion of cinchona with compound infusion of gentian, and infusion with metallic salts generally.

Sodium salicylate in solution precipitates the sparingly soluble salicylic acid if mixed with acids, and yields, if dispensed in powders with potassium acetate, the very deliquescent potassium salicylate. Sodium salicylate in strong solution is decomposed by tincture of ferric chloride; but, if well diluted first, changes only into ferric salicylate. Sodium benzoate solution is decomposed by acids to yield the sparingly soluble benzoic acid.

Mercuric chloride is decomposed by solution of potassium arsenite; but, if the alkaline solution has first added to it, in slight excess, diluted hydrochloric acid, no precipitation will take place on the addition of the mercurial salt; pyrophosphate and phosphate of iron solutions precipitate with dilute phosphoric acid. The *National Formulary* recommends the usage of dilute metaphosphoric acid, in place of the officinal "ortho" variety, as yielding a permanently clear solution.

THE TREATMENT OF INFLUENZA.

M. H. HUCHARD, writing in the *Revue Générale de Clinique et de Thérapeutique* (December 12), speaks of nervous prostration as being a chief clinical characteristic of severe cases of influenza, requiring for its treatment quinine, alcohol, and, in bad cases, even injections of caffeine and ether. Quinine, he says, is indicated on account of the markedly remittent type of fever, and to moderate the evening exacerbation it suffices to give a full dose (5 to 15 grains) of the sulphate of hydrobromate in the morning. Smaller doses more frequently taken are useful for their tonic rather than antipyretic effect. In the neuralgic or rheumatoid form of influenza, antipyrin (15 grains), combined with bicarbonate of sodium (7½ grains), is recommended by M. Huchard, to be taken every four hours, or, instead of antipyrin, phenacetin, or salol (7 grains). Influenza often assumes a broncho-pulmonary form, and in certain cases is very grave. In the epidemic of "la grippe" in 1886, recorded by M. Menetrier, the pneumonic forms were very asthenic. In such cases, tonics, milk, alcohol, and, in fact, general restorative measures are indicated rather than local applications to the chest. If the dyspnœa became severe, and the condition termed by Graves "pulmonary paralysis" ensues, then strychnine is of value; or, in case of impending asphyxia or renal asthma, venesection; but when the asthenia itself threatens life, there should be no hesitation at resorting to hypodermic injections of ether, and especially of caffeine. For the gastro-intestinal form, mild aperients, ipecacuanha, and the use of salicylates of bismuth or of magnesium, naphthol, or iodoform to promote intestinal antisepsis, are indicated.—*Lancet*, December 21, 1889.

THE ADMINISTRATION OF CHLORAL.

WIDERHOFER recommends the following in the treatment of convulsions in children:

> Chloral, gr. viiss to xl;
> Water, f℥ii;
> Syrup of bitter orange-peel, f℥v.
> Teaspoonful to be taken every two hours.

The following has been recommended by Yvon for administration to adults:

> Chloral, gr. xxx to xlv;
> Bromide of sodium, gr. xxx to xlv;
> Syrup of codeine,
> Syrup of bitter almonds, aa f℥ss;
> Water, f℥ii.

The following is likewise recommended by Yvon in cases of asthma and dyspnœa:

> Chloral, gr. xxx to lx;
> Iodide of sodium, gr. xxv;
> Simple syrup, f℥v.
> Tablespoonful to be given every hour.

As an enema in infantile convulsions the following has been proposed:

> Musk, gr. iii;
> Chloral, gr. viiss to xv;
> Camphor, gr. xv;
> The yolk of one egg;
> Water, f℥ii.

As a suppository chloral may be used in

the following combination, in which the caustic and irritating action of chloral is largely overcome:

Chloral, gr. viiss;
Extract of belladonna, gr. ½;
Cocoa-butter, gr. xlv.

—*Revue Générale de Clinique et de Thérapeutique*, December 19, 1889.

THE EFFECT OF DISTENTION OF THE ABDOMEN ON CIRCULATION AND RESPIRATION.

The effects of pregnancy, ovarian dropsy, ascites, and other diseases leading to great distention of the abdomen, in impeding respiration and disturbing the action of the heart, though there is little unanimity or precision in the opinions that are entertained respecting them, are generally admitted. Such affections are, indeed, of a chronic nature; the abdominal walls have time to yield, and the organs both in the abdomen and in the chest are enabled to accommodate themselves to the altered conditions; but we are not aware that any experiments have been undertaken to determine the effects of sudden distention of the abdomen in animals until the appearance of a paper by Dr. G. Heinricius, of Helsingfors, in a recently published number of the *Zeitschrift für Biologie*. It is generally believed that in pregnancy there is a marked increase in the tension of the systemic vessels, and that as a consequence the heart undergoes hypertrophy; but although such statements are to be found in almost every gynæcological textbook, the evidence on which they rest is extremely slender. In order to determine whether any obstruction to the circulation which may exist in the uterine vessels in pregnancy would raise the general blood-pressure, Dr. Heinricius first performed the very simple experiment of tying the aorta just above its division into the iliacs, and found that in four rabbits no change took place in the arterial tension of the carotids. Hence no effect was to be expected from ligature of the uterine arteries, nor from any such obstruction as might proceed from their distribution in the pregnant uterus and in the placenta. He next proceeded to ascertain by experiment the effects of distention of the abdominal cavity in the rabbit and cat. He employed a double canula, which was introduced through or at the side of the linea alba by a small puncture in narcotized animals; one arm of the canula was connected with a vessel containing normal saline solution at the temperature of the blood, and the other with a manometer. Arrangements were further made to record graphically the respiration and the blood-pressure in the carotid. The respiratory and blood pressure curves were taken after each 50 or 100 cubic centimetres of the solution had been injected into the abdomen from the vessel, and the phenomena which were presented proved to be remarkably uniform. In all the experiments, which numbered fifteen, it was found that the abdominal cavity could be filled with a large quantity of fluid, so that the parietes were quite tight, without either pulse or respiration being materially disturbed. It was only after very great distention had been produced that the respirations became more frequent and deeper, the expiratory effort being particularly well marked. This dyspnœa was apparently attributable to the diaphragm being pressed upward and the capacity of the thorax correspondingly diminished, so that mechanical obstruction to respiration was occasioned. The effect of this was that the accessory respiratory muscles were brought more into play, and the breathing became more and more thoracic in character. But these efforts soon became insufficient to compensate for the defective action of the diaphragm. The respiratory centre became excited, but was soon paralyzed by the venous blood. The respirations underwent a change: they became first shallow and slow, then deeper, dyspnœa finally occurred, and the animal died. If we turn now to the effects of the distention on the circulation, we find that when the distention became considerable the pulse at first increased in frequency, then became fuller, afterwards less frequent, and before the death of the animal usually suddenly smaller. The arterial blood-pressure first began to rise when the frequency of the pulse had considerably diminished, and then gradually fell as the pulse became smaller. Dr. Heinricius gives in the article we have alluded to numerous tracings, which collectively show that the abdomen may undergo great distention without abrogation of the more important vital functions. The abdominal cavity of a rabbit can support in this way the introduction of 500 cubic centimetres of fluid without difficulty, and nearly a litre and a half of fluid can be further injected before dangerous symptoms supervene, clearly showing how extraordinarily yielding the abdominal parietes are, and

affording a proof that it is not necessary to appeal to the slowness with which they are distended in pregnancy and in cases of abdominal tumor to explain the slight interference with the main functions of life that occurs in those conditions.—*Lancet*, November 9, 1889.

ESSENCE OF WINTER-GREEN.

At the meeting of the Société Nationale de Médecine de Lyon, held on December 23, 1889 (*Lyon Médicale*, December 28, 1889), Messrs. Cadeac and Albin Meunier presented a communication, in which they stated that the essence obtained by the distillation of the flowers of the *Gaultheria procumbens*, or by the distillation of the bark of *Betula lenta*, is composed of about nine-tenths of the salicylate of methyl and of the hydrocarbons isomeric with the essence of turpentine. The authors state that the essence of winter-green is a convulsivant of great energy, and its properties possess a degree of toxicity equal to those of the salicylate of methyl. Experimental studies prove that the essence of winter-green and the salicylate of methyl possess precisely the same properties and degrees of toxicity. Although the salicylate of methyl obtained by chemical synthesis is a little the more powerful stimulant, on the other hand its depressing effect is less marked than that of the pure essence.

AMMONIA IN COCAINE-POISONING.

A case of poisoning by a very moderate quantity of cocaine is reported by Dr. Golovkoff in the Proceedings of the Caucasian Medical Society, where ammonia was used with good effect to restore the patient. The patient was a somewhat delicate woman, who was suffering severely from toothache. The pain becoming unbearable, Dr. Golovkoff injected 15 minims of a two per cent. solution of the hydrochlorate of cocaine under the skin of the left cheek, which gave relief for three or four hours, when the pain returned as acutely as ever. A second 15 minims were injected, and in about five minutes' time the patient became restless, her pupils dilated, the surface of the skin became pale, the pulse and likewise the respiration became rapid, and shivering came on; the respiration soon ran up to 200 per minute, and was labored. A curious effect, too, was produced on the sounds of the heart, causing them to be audible at the distance of two paces from the patient. There was great pain over the cardiac region and back, together with a dread of death and convulsive movements of the limbs. There was some liquor ammoniæ at hand, and this the patient was given to smell, and a few drops were given internally every five or ten minutes. Amyl nitrite was also employed, but the latter seemed to do more harm than good, while the ammonia soon brought the pulse and respiration, and indeed the general condition of the patient, into something more like their natural condition, so that in about a couple of hours she had quite recovered. Dr. Golovkoff remarks that the only case he has been able to find in medical literature where ammonia was used as an antidote in cocaine-poisoning was one by Dr. Gooding, of Barbadoes, reported in the *Lancet* of 1888, vol. i. p. 394, and copied into the *Meditsinskoĭ Obozrênie*. (This was a case of a negress who had developed alarming symptoms after less than half a grain had been injected into the gum; she was treated by hypodermic injections of ether and ammonia.)—*Lancet*, November 30, 1889.

A NEW CONTRIBUTION TO THE STUDY OF PNEUMONIA.

It was in 1882 that Friedlander announced the discovery in the exudates of pneumonia of a peculiar micro-organism, which he thought to be the cause of the disease, and which has since then been called Friedlander's microbe. Other investigators, as Leyden and Gunther, confirmed the discovery. The experimental demonstration of the causal relation of this microbe to acute pneumonia was made by Friedlander, of Berlin, and by Talamon, of Paris.

It will be remembered that Friedlander injected directly through the walls of the chest, by means of a Pravaz syringe, a certain quantity of microbes held in suspension in distilled water; hares, guinea-pigs, dogs, and mice were the subjects of the experiments. The hares remained refractory. All the mice succumbed in from eighteen to twenty-eight hours after the injection, and the autopsy revealed intense pulmonary congestion, with nodules of red hepatization. Out of eleven guinea-pigs, six died with pneumonic lesions. Of five dogs, only one succumbed with similar lesions. In another series of experiments, mice were made to inhale a spray containing the coccus in suspension; many succumbed with the lesions of typical pneumonia.

Talamon, about the same time, confirmed Friedlander's results by a series of similar experiments on hares and guinea-pigs. The lungs of hares presented by him to the Anatomical Society constituted typical specimens of true lobar fibrinous pneumonia. Affanassieu repeated these experiments in Professor Cornil's laboratory, with like results.

Recently Platania, an Italian experimenter, has undertaken similar researches with Friedlander's pneumococcus (*Bulletin de Thérapeutique*, December 15, 1889). He has produced pneumonia by inoculating the microbe by the natural passages, at the same time favoring the result by aseptic traumatism of the lung through the thoracic parietes, or by causing the animal to inhale irritant gases, as ammonia, hydrochloric acid, etc. He has found, as a condition of successful experimentation, that some degree of traumatism at the point of inoculation, whereby the vital resistance of the lung is weakened, is necessary; it was not enough that the pneumococcus should be simply inhaled, and all such experiments failed to induce pneumonia.

Platania has endeavored to ascertain whether chilling of the pulmonary texture, formerly regarded as the direct cause of pneumonia, was also a predisposing condition of the production of the disease in animals inoculated with or made to inhale the specific microbe. Animals after inoculation were placed in a frigorific apparatus for a brief time; these invariably succumbed more readily to the disease with a more elevated temperature and more extensive pneumonic lesions than animals similarly inoculated that had not been exposed to the cold. Out of eleven guinea-pigs inoculated by the trachea and exposed for half an hour to intense cold, in eight the result was positive and in three negative. "If," he says, "we compare this experiment with that of simple tracheal inoculation, where in ten cases nine were negative, we are obliged to conclude that the influence of chilling does really manifest itself in our experimentation as a condition which predisposes the organism to cultivate in the lung the pneumococcus of Friedlander."

Platania also varied the experiment, both in subjecting the animals to refrigeration and in making use, as the material of infection, of dust containing the specific disease-germs, which the animals were made to inhale with cold air. Out of eight cases, three were positive and five negative.

As the complement of these researches, he studied the action of chilling alone. He placed a certain number of animals for a time in an elevated temperature (104° F.), then chilled them in various manners,—by plunging them directly in ice-cold water, by enclosing them in boxes surrounded by a frigorific mixture, etc. The results were conformable to those already obtained by other experimenters,—that is, there was found a state of hyperæmia of divers organs, but never the least focus of inflammation, or anything like pneumonia, in any of the animals subjected to experiments of this kind.

Doubtless the majority of pathologists now incline to the view that the microbic origin of frank fibrinous pneumonia is rendered more than probable by researches such as those above described. It is not yet definitely settled whether the encapsulated micrococcus of ordinary saliva, called by Sternberg *micrococcus Pasteuri*, be really identical with Friedlander's pneumonia-coccus. It will be remembered that Sternberg induced pneumonia in rabbits by injecting this microbe; and still more recently, Chautemesse has shown by numerous experiments that the injection of two or three cubic centimetres of normal saliva into the lung determines in twenty-four hours the death of the animal, after having produced an intense fever and a red hepatization, with, at the same time, a fibrinous pleurisy and pericarditis in which the encapsuled micrococci exist in great numbers.—*Boston Medical and Surgical Journal*, January 23, 1890.

NAPHTHALIN AND CATARACT.

Dr. Kolinski, writing in Von Graefe's *Archiv*, Band xxxv. 2, points out that naphthalin, which is coming a good deal into use from the powerful effect it seems to have on the micro-organisms existing in the intestines in some cases of diarrhœa, possesses also the property of producing changes in the nutritive power of the blood, thus being liable to set up degeneration of the blood-vessels. As the eye is one of the most highly vascular organs, it is one of the first to show any of the changes induced by interference with the nutritive property of the blood. Naphthalin is said, first, to cause small extravasations in the choroid and in the ciliary body, then ecchymoses and white patches in the retina, and finally cloudiness in the lens and crystals in the vitreous.—*Lancet*, November 16, 1889.

FLOODS AND THEIR RESULTS FROM A SANITARY STAND-POINT.

We have received information from DR. GEO. J. GARRISON, the secretary of the Tri-State Sanitary Association, that arrangements have been completed to hold a Tri-State Sanitary Convention at Wheeling, W. Va., February 27 and 28, 1890. Representatives will be present with papers and addresses from Pennsylvania, West Virginia, and Ohio. The object of the convention is to consider the question of floods and their results from a sanitary stand-point, and the best methods of managing the sanitary interests of a given community after such a calamity.

Owing to the mutual relations held by these three States with reference to large rivers, and the numerous towns in each one of these States that are annually affected by floods and their results, it has been thought wise to hold a convention for studying how best to manage the sanitary interests of cities and towns so affected.

Every person interested directly or indirectly in this important subject is earnestly requested to be present and assist in discussing the papers, and add whatever information he can to the solution of these practical and most important questions, affecting as they do the health and lives of thousands of citizens of these three great Commonwealths annually.

Reduced rates of transportation have been secured over all lines controlled by the Central Traffic Association in the three States named on the certificate plan.

Application has been made to the Trunk Line Association for like favor.

STANDARDS FOR MILK ANALYSIS.

At the annual meeting of the Society of Public Analysts, MR. ADAMS, F.R.C.S. and F.C.S., public analyst for the county of Kent, the president of the society, gave his address. Mr. Adams dwelt on the importance of establishing standards for milk analysis. Formerly this was impracticable, as there was universal ignorance about the constitution of milks of various qualities, but of late years there had been a vast accumulation of knowledge on the subject of milk analysis, and it was quite possible to establish a standard for professedly pure milk. At the present time official referees and public analysts experienced great difficulty in certifying whether a milk was adulterated or not, owing to the want of a standard which all authorities could recognize as the lowest limit to which unadulterated milk might fall. The fact that great natural variations obtained in the quality of milk was the strongest argument in favor of fixing a standard. Mr. Adams has himself contributed very materially to the perfection of milk analysis, and we hope that the opinions he has expressed in his presidential address will attract the attention that they deserve. At the present time we suspect that a great deal of the milk sold is largely adulterated with water, and the fact that it can be sold with impunity is mainly due to the want of a common standard for public analysts and official referees.—*British Medical Journal*, January 11, 1890.

THE TENTH INTERNATIONAL MEDICAL CONGRESS.

We have received the following official notice concerning the Tenth International Medical Congress, which is to be held in Berlin in August, 1890:

"We, the undersigned, do hereby give notice that, according to the resolution passed at the Washington meeting, September 9, 1887, the Tenth International Medical Congress will be held in Berlin.

"The Congress will be opened on the 4th and closed on the 9th day of August, 1890.

"Detailed information as to the order of proceedings will be issued after the meeting of the delegates of the German Medical Faculties and Medical Societies at Heidelberg on the 17th of September in the current year.

"Meanwhile, we should feel sincerely obliged if you would kindly make this communication known among your medical circles, and add in the same time our cordial invitation to the Congress.

"VON BERGMANN,
"VIRCHOW,
"WALDEYER."

A NEW OPERATION FOR DISPLACEMENT OF THE UTERUS.

At the meeting of the Section in Obstetrics and Gynæcology of the New York Academy of Medicine, held December 26, 1889, DR. A.

P. DUDLEY narrated the history of a case in which he had operated for the permanent cure of displacement of the uterus (*New York Medical Journal*, January 25, 1890). The diagnosis had been that of marked retroflexion with fixation to one side. No mention of a dangerous operation had been made to the patient. It had been the speaker's opinion all along that fastening the uterus to the abdominal wall in any way was the changing of one pathological condition for another. He did not believe it would remain fastened long. He had reopened the abdomen in two cases after the removal of the ovaries and tubes, and had found the uterus free in the abdomen. He had examined the broad ligaments carefully in these cases, and in one had found the ligature smooth and encapsulated. He had been working to get at some method by which he could fix a retroverted, or retroflexed, flabby uterus without fastening it to the abdominal wall, as he regarded that procedure opposed to anatomical principles.

The speaker then described the steps of his operation by means of a diagram. It consisted in freshening a portion of the anterior surface of the uterus to within about three-quarters of an inch of the bladder junction; then, after dissecting out the round ligaments and removing a portion of the peritoneum from each one, he sutured these to the freshened portions on the anterior surface of the uterus by means of over-and-over catgut sutures about one-quarter of an inch apart. Care was taken to leave no raw surfaces. The uterus was thus maintained in its normal position, and there was no interference with the bladder. It had been suggested that he should put a pessary in the vagina to overcome the traction, but this he had refrained from doing, wishing the operation to rest upon its merits. A mural abscess developed, and the patient had some fever for a few days. No peritonitis supervened, and the immediate results of the operation had given no trouble. The uterus had so far maintained its position. He thought the advantages appeared manifold. The uterus was straightened, the round ligaments were shortened, and there was no liability to the formation of adhesions or of pockets which might involve the intestines. The freshened surfaces gave perfect union between the round ligaments and the uterus. The faults in other well-known methods were, he thought, that the sutures would cut through from any slight strain, and the limited number of punctures did not afford a sufficient amount of exudate, such as resulted from a freshened surface. He hoped to be able to produce his patient before the Society. He had found some cysts of the ovary which were tapped, and she had since been free from pain in that direction, and had experienced no bladder irritation.

DR. E. H. GRANDIN said that he considered Dr. Dudley's operation, so far as he could follow it, a clever one. He feared, however, that it would not ultimately fulfil its aim any better than others which had been devised. When subjected to the various influences of change common to the uterus, the adhesions would stretch. He had seen cases in which the uterus had gone back to its former malposition. He had known this to occur in Alexander's operation. The round ligaments stretched, and he believed this would happen in Dr. Dudley's case. He personally favored the operation of hysterorrhaphy, and the passing of sutures through the peritoneum, and not entirely through the abdominal wall.

The CHAIRMAN thought it was possible that some retroflexion might occur above the point at which the round ligaments were attached to the surface of the uterus; that the upper two-thirds of the body of the uterus might become retroflexed and cause trouble, the line of attachment being changed by the operation from its original position.

DR. DUDLEY replied that the portion of the uterus above the bladder junction was usually not more than three inches, and an inch and a third of round ligament was firmly stitched to this surface. When the uterus became enlarged from any cause, he thought it was more likely to give way after Alexander's operation than in any operation where the round ligaments were shortened. He thought his method offered advantages over any form of operation which fastened the uterus to the abdominal wall, where the adhesions were liable to give way from muscular action, the weight of the intestines, or during efforts in labor.

THE OPHTHALMIC REVIEW.

The *Ophthalmic Review* begins its new volume with an American editor, DR. EDWARD JACKSON, of Philadelphia, who succeeds Dr. James Anderson, of London. It will hereafter contain original articles from American as well as English ophthalmic surgeons, with notices of all ophthalmological papers published here or abroad, and full reviews of the more important of them.

—THE—

Therapeutic Gazette.

Whole Series, Vol. XIV. | DETROIT, MICH., PHILADELPHIA, PA., } March 15, 1890. | Third Series, Vol. VI. No. 3.

CONTENTS.

Original Communications.

Page

New Therapeutic Agencies. By Prof. Dujardin-Beaumetz..... 145

Urinary, Urethral, Catheter, or Urine Fever, with the Report of a Case. By C. G. Buchanan Klopfel, M.D.... 152

Dr. Gustaf Zander's Mechanico-Therapeutic Institute in Stockholm. By Kate C. Hurd, M.D..... 161

Strychnine Pills—Alkaloid vs. Sulphate. By H. F. Meier..... 167

Leading Articles.

The Report of the Hyderabad Chloroform Commission..... 170

The Action of Cathartics..... 172

The Comparative Activity of the different Digitalin Preparations..... 175

Reports on Therapeutic Progress.

Page

Treatment of Acute Pneumonia by Inhalations of Chloroform..... 169

The Second Hyderabad Chloroform Commission..... 175

The Fatal After-Action of Chloroform.. 186

The Relation between Peripheral Irritation and Nervous Phenomena, with Special Reference to Eye-Strain..... 187

Angina Pectoris and Pseudo-Angina..... 191

Treatment of Goitre by Interstitial Injections of Tincture of Iodine..... 194

Aural Complications in Acute Specific Fevers..... 195

The Rational Treatment of Bronchial Asthma..... 197

Surgery of Infancy and Childhood..... 198

Diuretic Properties of Sugars..... 199

The Surgical Treatment of Hepatic Abscess..... 199

Cocaine in Yellow Fever..... 200

The Treatment of Erysipelas by Subcutaneous Injections of Carbolic Acid..... 201

Oxytocic Action of Quinine..... 202

The Symptoms and Conditions which justify Nephro-Lithototomy..... 202

The Treatment of Epilepsy..... 203

The Action of Solanin and Solanidin.. 204

Reviews..... 205

Correspondence.

Paris Letter..... 208

Berlin Letter..... 210

Berlin Letter..... 212

Dose of Fluid Extract of Gelsemium.. 214

Notes and Queries.

A New Constituent of Tea..... 214

A Rare Case of Idiosyncrasy to the External Use of Tannin..... 215

Lactation during Menstruation..... 215

Antipyrin and Chloral Hydrate..... 215

Sulphur Worthless for Fumigation..... 216

Aristol..... 216

Original Communications.

*NEW THERAPEUTIC AGENCIES.**

LECTURE IV.—ON VEGETARIANISM FROM A THERAPEUTIC POINT OF VIEW.†

By Professor Dujardin-Beaumetz,‡ Paris, France.

THE subject which I have chosen for this lecture is one of utmost importance in connection with the question of the application of diet to the treatment of disease. I hope to show you that if vegetarianism is not adapted to the well man and to our climate, a vegetable diet may, nevertheless, be most appropriate in a large number of affections of the stomach and kidneys. This subject has, moreover, given rise to numerous disputations, the literature of which would constitute a library by itself; from these writings, in fact, I have derived the principal materials for this lecture.§ I will call your attention

* A second series of "New Medications," published in 1887.

† From advance sheets, revised by the author (translated by E. P. Hurd, M.D.). Lectures delivered in Cochin Hospital, Paris, France.

‡ Member of the Academy of Medicine, Physician to the Cochin Hospital, Paris, France.

§ See and compare: Dock, "Du Végétarisme, ou de la Manière de vivre selon les Lois de la Nature," Saint-Gall; Docteur Théodor Hahn, "Der Vegetarianer" (Recueil Mensuel, Saint-Gall); Meta Welmer, "Les Végétariens," Lausanne; Raoux, "Du vrai Végétarisme et de ses Avantages" ("Manuel d'Hygiène générale et de Vé-

particularly to the interesting thesis defended before our Faculty, in 1880, by Algernon Kingsfordt, and the larger work since published by Edmond Pivion on the same subject.*

To decide this question, we must appeal successively to physiology, anatomy, and anthropology.

By the structure of his digestive tube, by the conformation of his teeth, man naturally finds his place in the group of omnivorous animals, and it is by virtue of this ability to subsist on all kinds of food that human beings can live in all climates. Carnivorous in cold countries, man becomes vegetarian in warm climates; and in this connection I can but allude with reprobation to one of the most specious arguments of the vegetarians, who, basing themselves on the close similarity which exists between the digestive tube of man and that of the primates, have maintained that, like the ape, man should be herbivorous and frugivorous.

This circumstance has not the argumentative value which the vegetarians attribute to it, for monkeys live only in warm countries, where man himself is vegetarian, and if there were species of monkeys living in our climates, they would probably be carnivorous like ourselves; we may, in fact, subject the monkey in our own country to the same mixed diet on which we subsist, and he will thrive on it.

This question of climate does not seem to have had the importance assigned to it which it deserves in the numerous discussions which have arisen in reference to vegetarianism, and I fear that writers have overlooked the wide differences which exist between the conditions of man inhabiting tropical regions and those of man living in the temperate and frigid zones.

We see the Englishman, a meat-eater *par excellence*, who derives from this regimen great advantages when he lives in his own country, become sick under the influence of this same alimentary regimen when he inhabits the torrid zone, as India, where he is forced to become vegetarian if he would keep in health.

I believe, then, that from an anatomical point of view, man and a certain number of animals, as the hog, should be ranked among the omnivora, and to this classification, save with respect to the monkey, no serious objection has been raised.

Let us see now what data are furnished by physiology and anthropology.

It is certain that, according to the climates in which he lives, man may find in a purely vegetable diet all the elements necessary to engender force and substance, and it is a mistake to affirm that an animal diet is absolutely indispensable for the production of force. Is it not from animals strictly herbivorous—the horse and the ox—that we obtain the greatest sum of muscular work? And the Hindoo, the Chinese, the Tonquinese, who live exclusively on rice, are able to do an amount of labor equal and even superior to that performed by the workingmen of the countries of the north who live on meat.

Moreover, we may affirm that the greater number of the inhabitants of the globe, whether by necessity or in consequence of their religion, subsist on a vegetable diet; but when we come to the countries in the frigid and temperate zones, we easily find proof that the introduction of meat into the diet of the laboring man augments the production of his work.

In a work devoted to the subject, Dr. Kingsfordt enumerates at some length the different regions of the habitable globe where the people live exclusively on vegetable food, and remarks that in the northern countries the lower classes are mostly vegetarian. The fact is too true, and we see still, in France, multitudes of our day laborers in the country living on a daily fare in which meat constitutes hardly any constituent. But such writers as Kingsfordt forget that this kind of diet is imposed on the laboring classes by the poverty and misery of their situation, and, certainly, the Irishman, who lives mainly on potatoes, would be very glad to eat meat if he could get it. What it is necessary to show is not the possibility of living on a vegetable diet in our climate, which is not under dispute, but that a vegetable diet from the point of view of the production of work is superior to a diet containing, in addition, a certain quantity of meat. Here statistics are in blank contradiction to the contention of the vegetarian, and in proportion as in our country-places the alimentary ration is improved by the addition of animal food in larger quantity, the health of the people is made

---

gétarisme," Lausanne); Bonnejoy, "Principes d'Alimentation rationnelle;" Cocchi, "Le Régime de Pythagore;" Algernon Kingsfordt, "Alimentation végétale chez l'Homme" (Végétarisme, *Thèse de Paris*, 1880); *La Réforme Alimentaire*, January, 1887.

* Edmond Pivion, "A Study on the Regimen of Pythagoras: Vegetarianism and its Advantages." Paris, 1885.

better, and the production of work is augmented, and this is especially perceptible in our great industrial establishments, mines, and ship-yards.

Moreover, the history of mankind goes to show that, from the very origin of the human race, man has been able to adapt himself to the climates in which he has lived by reason of this very fact that he is an omnivorous animal. The primitive man, before he had come into possession of the weapons of offence, which enabled him to subjugate and kill the animals around him, must have been strictly a vegetarian, but when once he learned to use arms and weapons of destruction, he became carnivorous, and the troglodyte of the Vézère cooked over the fire, which he kept ever burning before the door of his cave, the morsels of the reindeer which he had killed in the chase. The necessity of using a flesh diet was imposed upon him by the rigorous climate in which he lived. Our country was then undergoing the rigor of the glacial period, and the reindeer and the bear lived here in abundance.

On the other hand, in warm countries man could fare very well without meat. In India, that cradle of the civilization of Indo-European races, we see the vegetarian regimen prescribed by the prevailing religion, and you will find in the books of the law of Manou sentences like the following:

"He who, in conformity to the law, refuses to eat meat vampire-like is beloved in this world and is not afflicted by diseases."

One of the reformers of the religion of Brahma, who died B.C. 600, Buddha-Gautama or Sakya-muni, condemns absolutely the usage as food of everything that has had life. It is the same in China, where Buddhism, which was introduced about A.D. 64, proscribes animal food.

We see this proscription repeated by the great philosophers and reformers, who all appear to be struck by the evils resulting from excesses in eating, and especially from excesses in animal food, and this is noticeable even in the fabulous periods of our history. Homer extols the lotophagi who lived on milk and fruits. He opposes the ferocity of the Cyclops—eaters of flesh—to the mildness of manners of these eaters of the lotus.* The history of Prometheus gives also the same idea. Prometheus steals fire from heaven in order to make unwholesome viands palatable, and everybody knows what was the penalty of the theft.

But it is to Pythagoras, of Samos, who lived B.C. 608, that the honor belongs of having established the vegetarian regimen, which has since been also called the regimen of Pythagoras. Nevertheless, Pythagoras' dietary was far from presenting the severity which has since been attributed to it, for, according to Cocchi, Pythagoras did not absolutely prohibit meat, but allowed his followers "to eat the flesh of young and tender animals."

Socrates and Plato held and taught the same notions, and in Plato's "Republic" Socrates makes the inhabitants of this island vegetarians; hence his interlocutor Glaucon, who seems to believe in more substantial fare, makes this reply, after hearing of the frugal vegetarian meal enjoyed by the inhabitants of this republic: "If you were organizing a state of swine, would you feed them a whit differently?"

You will continually find these same vegetarian doctrines in almost all the ancient philosophers,—Seneca, Plutarch, etc. It is the same with the fathers of the Church, in whose writings one might point to scores of passages which show that the ascetic regimen was followed by a great number of these fathers; passages which Balzer, a clergyman, has collected into a volume, which bears the somewhat strange title of "Vegetarianism in the Bible." Thus it is that St. Chrysostom, St. Jerome, St. Basel the Great, St. Clement of Alexandria, St. Gregory of Naziance, St. Augustine, etc., extol temperance, and, in particular, vegetarianism, and we have still further a proof of the favor extended by the Church to vegetarianism, in the almost absolute vegetable diet to which certain religious orders—as the Chartreux and the Trappists—are subjected.

In times much nearer our day, we see also the same views carried out, and I will cite, in instance, a dean of our Faculty in 1709,—Hecquet. Hecquet, who was one of the most vehement advocates of blood-letting, and served as a type to Lesage for his Doctor Sangrado, was also an earnest advocate of vegetarianism.

* "Not prone to ill, nor strange to foreign guest,
They eat, they drink, and nature gives the feast;
The trees around them all their food produce;
Lotos the name, divine, nectareous juice."
POPE'S *Odyssey*, Book IX.

Fénelon, in his "Télémaque," conveys the same notion of primitive simplicity in his description of the inhabitants of Crete, who, abstaining mostly from wine and animal food, were a "meek, sober, and amiable race."—TR.

About the same epoch—1760—there was a noted English physician who was a convert to vegetarianism,—Cheyne. Cheyne, who, like Hecquet, condemned, as contrary to the normal state, the eating of flesh, wrote as follows:

"I take for my food milk, tea, coffee, bread and butter, salads, cheese, fruits and cereals of all kinds, potatoes, turnips, carrots. In a word, I eat everything which has not had animal life; these foods afford me a greater variety than a flesh diet. I drink no wine or other liquids, but I rarely am thirsty, for my food is for the most part liquid or succulent. I am always gay and in good trim, and my sleep is sweeter and more sound than when I used to eat meat; for with my present diet I am more active. I rise at six o'clock in the morning and go to bed at 10 P.M."

I should make this lecture far too long if I were to mention all the noted men who have followed the vegetarian doctrine. Thus I need hardly remind you that Voltaire praised vegetarianism, and in his writings points out all the advantages which may be derived from a vegetable diet.

Rousseau descants at length on this subject, and in the annotation which he has made to the article of Plutarch on "Kreophagy," he describes the first meal in which barbarian man partook of animal flesh, and indulges in the following emphatic, if not very poetic, lines:

> "Les peaux rampaient sur la terre écorchées!
> Les chairs en feu mugissaient embrochées!
> L'homme ne put les manger sans frémir
> Et dans son sein les entendit gémir."

Cuvier, Buffon, Monthyon, Menard, and others of the same epoch were vegetarians.

But these are, I repeat, exceptional instances, at least in our climate, and no large body of people has ever been persuaded to adopt these views, notwithstanding all the efforts of the various vegetarian societies.

These societies had for their founder Gleizes, who published in 1840 a work entitled "Thalysie, or the New Existence."* This was the starting-point of all the associations called vegetarian, many of which now exist in America and in England. In the latter country the most important of these societies is the "National Food Reform Society." At Hamburg there are also similar societies. In France, Dr. Gayard is the president of the Vegetarian Society. This society had for its organ a journal, which was published in 1881 and 1882, called *La Réforme Alimentaire.* I must also mention the very active part taken recently in the vegetarian campaign by a vehement partisan of this dietary system,—Dr. Bonnejoy, of Vexin.†

All these societies have placed themselves for the most part on a sentimental basis laid down by Gleizes himself, who writes in this manner: "The murderous slaughter of animals is the principal source of the cruelty of man and of his crimes, as the habit of feeding on their flesh is the primary cause of his ugliness, of his diseases, and of the short duration of his existence." And in a letter which Dr. Gayard wrote me on this subject, I find the following passage: "Vegetarianism is less a scientific question, in the strict sense of the word, than a social, and especially a moral, question. The true domain of the question is that of conscience,—*i.e.*, of the moral umpire within us. The supremacy of this inward monitor—the true *ego*—is not acknowledged by all; in gross or depraved natures it is kept out of sight and in abeyance. The practice of vegetarianism is one of the best methods for restoring that supremacy; in other words, for rendering more sensitive the moral sense."

The same idea is advocated by one of the most fanatical partisans of vegetarianism,—Dock, of St. Gall,—who regards vegetarianism "as a regimen at once the most natural, the most human, the most moral, the most æsthetic, the most wholesome for the body and for the soul, and the most economical."‡

But we are not called upon here to concern ourselves with vegetarianism from a social and religious point of view, and we will now take up the pathological and therapeutic aspect of the question.

What impressed all the physicians of antiquity was the evils attending the excessive ingestion of food, and all who have since then practised medicine have remarked these evils. As a general thing, the rich and the idle eat too much, and the daily ration much exceeds the standard amount fixed by physiology to repair the wastes of the organism, a waste estimated, as you know, at twenty grammes of nitrogen and three hundred and ten grammes of carbon for the twenty-four

* Gleizes, "La Thalysie, ou nouvelle Existence," in three volumes, 1840–42.

† Bonnejoy, of Vexin, "The Rational, Scientific Vegetarianism." Bordeaux, 1889.

‡ Dock, "On Vegetarianism, or the Manner of living according to the Laws of Nature." St. Gall, 1878.

hours. Already, in my "Alimentary Hygiene," I have insisted on this point, and would refer you to the three lectures there published on "Alimentary Rations," on "Insufficient Diet," and on "Superabundant Alimentation."*

But the recent labors of Gautier and Bouchard enable us to study this question of vegetable diet from quite another point of view. We know the considerable part which is played by the ptomaïnes and the leucomaïnes in the phenomena of self-poisoning so frequently attending a great number of patients. Everybody seems agreed in attributing to this auto-intoxication the *embarras gastrique*, the congestions of the liver, of which we hear so much, and especially, as I showed you in the last lecture, the most of the symptoms which accompany gastric neurasthenia.

Lastly, in that complex pathological aggregate which has renal insufficiency for its origin, these phenomena of poisoning occupy a preponderant place, and we ought to ask ourselves to-day if, from this special point of view, the vegetarian regimen is not much superior to a meat regimen.

It would appear that in all those pathological states where we need to reduce to the minimum the figure of toxines introduced in the food, a vegetable diet is indicated. But it now remains to determine how we should regulate and prescribe this vegetarian regimen.

First, we must settle upon this important point,—that a vegetal diet may suffice for alimentation. This fact is incontestable, since, even in our own climate, we see the poor inhabitants of entire country districts maintain their health and strength on this exclusive regimen. Moreover, we have analyses to show that man may find in vegetables alone the quantity of nitrogen necessary for his support.

In fact, most starchy and leguminous vegetables contain a certain quantity of nitrogen. Glance over the following table by Payen, and compare the proportion of nitrogen, fatty matters, and carbon, in the different aliments which make part of the vegetarian regimen, and you will see that you have in all of them nitrogen in greater or less quantity. It is easy to understand that you may associate these different foods in such a manner as to constitute an alimentary ration comparable to the regimen of meat-eaters.

	Nitrogen.	Carbon.	Fats.	Water.
Butcher's meat	3.00	11.00	2.00	78.00
Egg's (white and yelk)	1.90	12.50	7.00	80.00
Cow's milk	0.66	7.00	3.70	86.50
Goat's milk	0.69	7.60	4.10	83.60
Brie cheese	2.25	24.60	5.56	58.00
Gruyère cheese	5.00	36.00	24.00	40.00
Chocolate	1.52	48.00	26.00	8.00
Beans	4.50	40.00	2.10	15.00
Haricot (kidney) beans	3.88	41.00	2.80	12.00
Lentils	3.75	40.00	2.65	12.00
Peas	3.50	41.00	2.10	10.00
Hard southern wheat	3.00	40.00	2.10	12.00
Tender wheat	1.81	39.00	1.75	14.00
Indian corn	1.70	44.00	8.80	12.00
Rice	1.08	43.00	0.80	13.00
Potatoes	0.24	10.00	0.10	74.00

Moreover, you have only to refer to the tables which I have published in my "Hygiène Alimentaire" to see how easy it is for a man to find in the so-called vegetarian regimen the quantities of nitrogen and carbon which are necessary and sufficient for him, and which are fixed, you know, according to the figures of Hervé-Mangon, at from 6 to 9 grammes of carbon and from .250 to .360 of nitrogen per kilogramme of the weight of the body.† I say in the vegetarian regimen, for the most fanatical partisans of this regimen allow milk, eggs, and cheese. Here you have, then, according to Pivion, an alimentary ration as simple as possible, in which you will find the 20 grammes of nitrogen and the 310 grammes of carbon necessary to maintain life.

* See these lectures reproduced in *Medical News*, vol. xlix. 505 and 561, and in the THERAPEUTIC GAZETTE, December 15, 1886, p. 793.

† Dujardin-Beaumetz, "Hygiène Alimentaire," 2d ed., p. 115; also *Medical News*, vol. xlix. p. 505.

	Nitrogen.	Carbon.
500 grammes (1 lb.) of baker's bread containing	6.00	150
500 grammes of lentils (peas or beans)	14.74	214
500 grammes (1 pint) of milk	3.30	40
30 grammes of Gruyère cheese	1.65	13
1530 grammes.	25.69	417

Among the foods utilized by the vegetarian regimen, there are some that are highly azotized, and, without speaking of eggs and cheese, I might insist particularly on certain amylaceous products, as lentils, peas, and beans. In my "Alimentary Hygiene" I have shown that the lentil contains a large quantity of azotized products, and, moreover, a notable quantity of iron, more even than is contained in meat. Moreover, none of the starchy foods is deprived of nitrogen. It has, indeed, been maintained that the manioc, on which the Indians subsist who inhabit the banks of the Orinoco, does not contain nitrogen. This is an evident mistake. In an analysis which has been furnished me by Dr. Morel, assistant professor at the School of Toulouse, it is shown that 100 grammes of manioc flour give 22.40 grammes of starchy matters and 9.65 grammes of azotized matters.

But I must speak here more especially of the new amylaceous products,—soja, fromentine, and legumine,—which are proved to be superior, as you will see, to meat itself in the proportion of nitrogen which they contain.

The soja is the Japanese bean (*Glycine hispida*), to-day much cultivated in certain counties of Europe, and, in particular, in Hungary, since 1875. This bean, which contains extremely little starch, and has been employed in the dietetic treatment of diabetes by Lecerf, contains a very large amount of azotized matters; and, on referring to the different analyses published by Steuff, Capan, Pellet, and Muntz, we find the following percentage of the alimentary principles contained in this bean:

	Per cent.
Protein matters	36.67
Fatty matters	17.60
Starchy matters	6.40

If now you compare this analysis with that of meat, you obtain the following result:

	Beef.	Soja.
Water	74.00	9.37
Proteinaceous matters	22.74	36.67
Fatty matters	2.39	17.60
Potassium	0.54	3.10
Phosphoric acid	0.66	1.47

As you see by these figures, the Japanese bean has the decided advantage over beef.

From an alimentary point of view, soja serves several uses. A sauce is made from it which bears the name of *stiso* and *soju*; but the most curious and interesting point in the application of soja to dietetics is that a kind of cheese can be made from it—it is the *pea* or *bean cheese*, very much prized in Japan; and those who would like to know more about the fabrication of this cheese will find all the information they desire in the article of Egasse, "On the Economic and Therapeutic Applications of Soja," in the *Bulletin de Thérapeutique*, vol. cxv. p. 133.

In Europe the soja has been utilized for the food of men and animals, and in the last few years the attempt has been made to make bread of it, which is a matter of considerable difficulty by reason of the large proportion of oil which this bean contains. This oil, as Leon Petit has shown, is very purgative, and might replace castor oil in medical practice. Hence it becomes necessary to rid the meal of this oil in order to render it fit for our domestic usages. Lecerf, in Paris, and Bourdin, in Rheims, have succeeded in rendering the bread fabricated from this meal very well supported by the stomach.

Here, then, we have a bean which is more nutritive than meat, and which serves for nourishment to a great country like Japan under the different forms of sauce, of cheese, of farina, and even of a real artificial milk. You will see all the advantage which the vegetarian regimen may derive from such a food.

Fromentine is also a highly azotized product; it is obtained from the embryos of wheat by certain new processes of grinding and bolting. These embryos contain, like the soja bean, a certain quantity of oil, which is purgative, like soja oil, and may take the place of castor oil. The analysis of these dried and pulverized embryos have given Douliot the following figures:

Albuminoids	51.31
Ternary substances	29.08
Cellulose	12.63
Mineral substances	6.98

It is, as you see, a true vegetable meat; but here, as in the case of soja, it is the presence of the oil which hinders the making of bread of this flour, and this oil must be got rid of if the fromentine is to be used either for bread or gruel. Of this farina different culinary products are made, which are now much in use; there are biscuits and cakes of fromentine, and it is much utilized in the form of gruel or porridge. When you order fromentine meal, you must take care first to incorporate this meal in a certain quantity of water before adding it to the milk or *bouillon* which is to serve for the vehicle. Without this precaution, you would obtain clots, or lumpy concretions, which spoil the appearance of the porridge.

Bovet has prepared, under the name of legumine, a substance similar to fromentine, and having for its basis not only the embryos of wheat but also those of the papillonaceæ.

It is necessary to avoid, in the vegetarian regimen, giving the starchy grains enveloped with their hulls. Hence I always take care to order amylaceous substances in the state of *purée* or stew, to which you may add green vegetables, such as carrots, turnips, potatoes, etc.

One may also give a certain variety to the vegetarian regimen, and I know of no better examples in this regard than the bills of fare of vegetarian banquets, such as you will find in the *Réforme Alimentaire*, the organ of the vegetarians in France.*

Under the name of *quaternaires* are comprised the quaternary aliments. As for the Graham bread, it contains all the elements of the wheat,—that is to say, the flour and the bran. The vegetarians consider the presence of this bran as increasing the nutritive properties of the bread; this is a statement which cannot be admitted, for, relying on very exact analyses, I have shown in my "Alimentary Hygiene" that white bread of the first quality contains more nitrogen than bread of an inferior quality, and particularly bran bread.

You will also find in the same journal some very curious receipts; for example, turbots and frogs *à la végétarienne* (mock-turbot and mock-frog), which show well that, in spite of their pretension, man is more omnivorous than the vegetarians would fain admit. You will also find, in the "Principles of Rational Alimentation," by Bonnejoy, of Vexin, some culinary receipts applicable to the vegetarian regimen.

Now that it is demonstrated that by a regimen of eggs, milk, vegetables, and fruits one may find not only a sufficient dietary, but even a variety, which might satisfy the most delicate palate, it remains to consider in what circumstances we may for therapeutic ends apply this vegetarian regimen. But, first, we must discuss still another point,—namely, what are the beverages which should be taken with the vegetarian diet.

From a physiological point of view, the wines augment the acidity of the gastric juice, and we know that eaters of meat are also drinkers of wine and alcohol, while, on the contrary, vegetarians ought to be water-drinkers or beer-drinkers; the latter, by the malt and diastase which it contains, favors the digestion of starches.

Hence, in England and the United States, we see the temperance societies and the vegetarian societies working hand-in-hand. I believe that, with the vegetarian regimen, one should be very moderate in the use of wine, and never take any intoxicant stronger than diluted wine, beer, or cider.

The affections of the digestive tube or of the stomach to which the vegetarian regimen is applicable are numerous. This regimen,

---

* Here is one of these *menus*, which the translator feels obliged to give with scarcely any attempt at rendering into English:

Potages.—Purée of lentilles, soupe printanière.

Hors-d'œuvre.—Beurre, radis, olives (butter, radishes, olives).

Entrées.—Œufs à la coque (eggs in the shell), asperges en branches (asparagus).

Quaternaires.—Macaroni au blanc de poule (with white of egg), petits pois (green peas).

Saccharins.—Crème à la vanille (vanilla cream), ruches d'amygdaline savarin.

Dessert.—Fromage suisse (Swiss cheese), compote de pommes, confiture de fraises, dattes, oranges, gaufrettes (waffles).

Vins.—Mâcon vieux, Saint-Émilion.

Pain de Graham (Graham bread).

Here is another *menu*:

Potages.—Crécy, gruau d'avoine (oatmeal gruel).

Entrées.—Timbale végétarienne, pommes nouvelles au beurre.

Quaternaires.—Œufs brouillés aux pointes d'asperges (scrambled eggs with asparagus tops), fèves de marais à la tariette.

Salades.—Laitue (lettuce) et romaine au jus de citron.

Saccharins.—Riz, baba, crème à la fleur d'orange, gâteau génois à l'abricot.

Dessert.—Fromages, compote d'ananas, confiture de groseilles, fraises, oranges, biscuits à la framboise.

Vins.—Mâcon, Saint-Émilion.

Pain de Graham (Graham bread).

in fact, reduces to a minimum the toxines which enter the economy by the food.

Remember, in fact, what I told you last year *à propos* of the ptomaïnes and leucomaïnes.* As soon as death smites the living being, and at the very instant when death appears, the ptomaïnes manifest their presence. At first non-toxic, they become toxic from the fourth or fifth day which follows death, and these substances are sufficiently deleterious to promptly cause the death of animals to which they are administered. Among these toxic alkaloids I will mention, particularly, neurine, mydaléine, putrefactive muscarine, methylganine, etc. Moreover, according to the animal species, these ptomaïnes are more or less active; thus, putrefied fish furnish a great number, such as ganidine, parvoline, and especially ethylenediamine. Mussels give mylotoxine, which is the cause of poisoning by these mollusks. We find also certain of these ptomaïnes in ripe cheeses. As man consumes a great quantity of animal substances whose time of killing often goes back to eight or ten days, it is easy to understand what a fruitful source of poisoning may be there found; this danger is avoided by those who adopt the vegetarian regimen.

If vegetable substances may undergo putrescent alterations, these are much less likely to take place with respect to vegetable than to animal food. Hence this diet system becomes obligatory whenever, by the bad functioning of the kidneys or digestive tube, the toxines may accumulate in the economy.

In the first rank we will place all those cases where there exists renal insufficiency. Whether this insufficiency results from interstitial nephritis, from catarrhal nephritis, from fatty degeneration of the kidneys, we should enjoin a vegetable diet. I shall return to this subject when I come to speak of the treatment of renal insufficiency. In the dilatation of the stomach of gastric neurasthenics, this same regimen also gives good results. Lastly, in the putrid diarrhœas, the vegetarian regimen is also indicated.

But there is another point of view in connection with which this regimen gives good results. I refer to the irritations of the gastric mucous membrane,—acute or chronic gastritis. In fact, this regimen demands little of the stomach; the labor of digestion is imposed principally on the intestines, and the stomach is thereby given an opportunity to rest. Lastly, in the dyspeptic troubles, properly so called, which result mostly from modifications in the gastric juice, whether this be an exaggeration or a decrease in the acidity of this fluid (*hyperchlorhydria*, or *hypochlorhydria*, as Germain Sée calls it), this dietetic system enables us to cure these affections without imposing any work on the pepsin glands. Lastly, in the general diseases characterized by hyperacidity, such as the uric diathesis, we can still derive benefit from the vegetarian regimen.

To sum up, then, and as the conclusion of this lecture, I would say, if from an anthropological and physiological point of view, man is omnivorous, and may, according to climates and according to his necessities, live on a flesh diet, or on a mixed diet, or on a vegetable diet, from a therapeutic point of view, the latter regimen as applied to our climates constitutes a very important method of treatment, which is demanded in a great many gastric and renal, as well as general, affections.

In the next lecture I shall take up the study of the treatment of diarrhœa and constipation.

* THERAPEUTIC GAZETTE, November, 1888, "On Ptomaïnes and Leucomaïnes."

URINARY, URETHRAL, CATHETER, OR URINE FEVER, WITH THE REPORT OF A CASE.†

BY C. G. BUCHANAN KLOPHEL, M.D.,
ROCHESTER, N. Y.,
Member of the New Sydenham Society, London, etc.

ALL shades of authoritative statements have been advanced as the true solution of the perplexing problem,—the pathogenesis of this disease,—and as the question is still a moot one, the terms urinary, urethral, catheter, or urine fever have been applied to the various morbid phenomena associated with certain operations upon the urethra and bladder. They express the general understanding of probably the majority of operators with regard to it. The disease has been recognized for more than three-quarters of a century. Stating briefly some of the various opinions regarding its etiology, it is regarded by some as arising from the decomposition of unhealthy urine, under certain conditions within the urethra, and we have those who regard it as a reflex nervous

† Read before the Tri-State Medical Association of Mississippi, Arkansas, and Tennessee, at Memphis, Tennessee, November 14, 1888.

phenomena; some who consider it the product of nervous disturbance of already diseased urinary organs; some who consider it the general effect of a ptomaïne; many who believe several of these forces to be at work in its causation; doubtless many who regard all the reasons valid, taken as a whole, and applied individually and collectively to suitable cases. Likewise as regards its treatment the same confusion exists.

It was known in 1800, but not clearly defined, that surgical interference with the urethra and bladder was sometimes and under certain circumstances followed by an irritative fever. However, it was not until 1810 that Moffatt, as quoted by Velpeau, described a case of chronic stricture of the urethra, in which simple catheterism was followed by rigors, irregular fever, purulent arthritis, and death.

In 1832 ideas concerning the casual relationship of catheterism to consecutive fever first found form and expression in the writings and teachings of Brodie and Velpeau, and, perhaps, in the teachings of Civiale. Brodie distinctly and even emphatically mentions the danger of catheterism, and describes as occasionally occurring, in consequence of it, paroxysms of irregular fever, like ague, and leading sometimes to prolonged debility; sometimes to continued fever, with rheumatic pains; and sometimes even to mania. He further stated that in such cases death may follow, but he cites no case of its actual occurrence.

The fact that the disease may follow, with more or less gravity, the skilful and unopposed introduction of an aseptic catheter, even though there be "apparently" absence of any mechanical injury to mucous membrane, has given rise to the hypothesis that the urethra is endowed with some peculiar sensibility not possessed by other mucous membranes, which may be called into action by the simple contact of a smooth and soft catheter, and which, thus aroused, exerts an influence not only upon the organs in its immediate vicinity, but also upon the circulation through the kidneys, and even upon the heart itself.

Nearly all writers on this subject attach the greatest importance to an extreme sensibility of the urethra, in consequence of which, simple contact, which, in the case of other mucous membranes might be harmless, here arouses the gravest disturbance.

Belfield says, "So far as I am aware, there is no proof, either physiological or clinical, that a chronic and continuous reflex action, purely nervous, is ever manifested as the result of a solitary local irritation such as the introduction of the catheter. It may be asserted, without fear of contradiction, that any chronic and continuous disorder of the urinary organs, traceable to the introduction of a catheter, or sound, or other operation in the urinary channel, is based upon morbid anatomical changes, and is not of merely reflex, nervous origin. The introduction of the instrument may be, it is true, the initial step in the pathological process; the catheter may empty an habitually distended bladder; the sound may accomplish the same result by dilating a tight stricture; but the disastrous consequences which follow in either case are due, not to the contact of the instrument with the susceptible mucous membrane, but to the mechanical congestion in the urinary organs caused by the removal of a chronic impediment, and the relief of a chronic distention of the bladder, ureters, and kidneys. The morbid anatomical features of the case may be overlooked or unappreciated, but they are, nevertheless, present."

He further states: "Yet there are, doubtless, cases in which reflex action, purely nervous,—that is, without perceptible foundation in morbid anatomical conditions,—can be properly assumed as the cause of urethral fever." These, he says, are acute cases,—those in which the initial symptoms are manifested immediately, or, at least, within twenty-four hours after the introduction of the instrument, which attain their acme in a few days at most, and terminate either in death (rarely) or recovery within three days. In all these there are symptoms of heart failure. In the most pronounced this failure may attain such a degree as to occasion faintness, syncope, and even death may be indeed termed "shock." In less severe and usual cases this failure of the circulation is indicated by coldness of the extremities and chill.

For these phenomena there is a physiological basis. That certain of the pelvic mucous membranes are intimately associated with important nerve-centres is demonstrated by both clinical and experimental observations. During the discussion of a paper on "Catheter Fever," by Sir A. Clark, at a meeting of the Medical Society of London (*Lancet*, December 22, 1883), Mr. Savory emphasized the above clinical fact in the following words: "Every surgeon must be familiar with the

fact—which is confirmed by physiology—that, during the administration of anæsthetics, after the power of reflex action has ceased in all other parts of the body, it can still be provoked by irritation about the urinary organs. If you decapitate a turtle, and wait for some hours, the power of evoking reflex action dies out part by part, but the last part in which you can evoke it is in the region of the cloaca." I suppose it must be in the experience of every surgeon that occasionally, even in the very young and healthy, a considerable amount of shock is caused by the introduction of the instrument. I suppose it must have occurred to all to see in some cases, even after sounding children for stone, that a decided shock is produced by the operation. It is also in the experience of many surgeons that the introduction of an ordinary catheter or sound, even as far as the fossa navicularis, has been followed by chill and decided prostration of the patient; and it is comparatively seldom that a sound or catheter can be passed for the first time through the prostatic urethra, even of a perfectly healthy man, without causing some slight indication of nervous depression.

The urethra is not the only mucous membrane whose irritation may have a depressing effect upon the circulation, for it is a fact well known by surgeons that during operations involving the anus and rectal sphincters, a patient, under the influence of an anæsthetic, is peculiarly prone to exhibit failure of the heart or respiration.

As I previously remarked, most surgeons connect the phenomena with local nerve injury. Confirmations of this opinion and observations are recorded by Gross, Otis, Coulson, Sir H. Thompson, Professor E. Dittel, and others.

Belfield has directed attention to the fall of blood-pressure, associated with mechanical irritation of the mucous membrane of the vagina or rectum. While making some experimental researches in the laboratory of Professor von Basch, in Vienna, he accidentally discovered and was enabled to demonstrate that mechanical irritation of the mucous membrane of the vagina or rectum, near their respective orifices, caused in curarized dogs an immediate and pronounced depression of the blood column and of the heart's action. This depression amounted in some instances to more than fifty per cent. of the entire blood column, an amount certainly ample to cause decided symptoms of nervous and circulatory depression, if induced in the human animal. He was further enabled to ascertain that this effect was produced by a true reflex action, involving certain branches of the sacral nerves, the spinal cord, and the splanchnic nerves, for the circulatory depression failed to appear after mechanical irritation, if the sacral nerves, on the one hand, or the splanchnic nerves, on the other, were divided.* That the same power is possessed by the urethral mucous membrane he was enabled to satisfy himself by a simple though effective experiment.

Belfield's conclusions are as follows: "A general survey of the subject suggests that the various morbid conditions which may be excited by the passage of sounds and catheters into the urethra and bladder, comprising, among others, the somewhat ill-defined groups of symptoms known as urethral fever, are due to various causes, chief among which may be named the following:

"1. Reflex action, a purely nervous phenomenon without appreciable anatomical lesion.

"2. Laceration of the mucous membrane of the bladder or urethra.

"3. Congestion of urinary tract, caused by the sudden evacuation of an habitually distended (and usually hypertrophied) bladder.

"4. An aggravation of pre-existing renal disease by the sudden removal of an habitual impediment to the evacuation of the urine.

"5. The introduction of septic matter into the bladder by the use of unclean instruments.

"Clinically, it will be observed that the chill, fever, and other constitutional disturbance, devoid of anatomical explanation, and therefore explained by reflex nervous influence, are exhibited within a very few hours after the passage of the instrument, perhaps even beginning during its introduction; while those conditions which are caused by circulatory disturbance, often culminating in inflammation, manifest the first symptoms rarely in less than twenty-four hours, and often after the lapse of several days, subsequent to passage of the instrument."

Sir Henry Thompson has described three forms of this disease. The first a simple febrile attack, or, in other words, an acute transient attack, manifested by a rigor and some fever, occurring several hours after the passage of an instrument, commonly after the first passage of urine. The second

* These observations of Belfield were first published in Du Bois Reymond's *Archiv für Physiologie*, 1882, page 298, entitled. "On Depressory Reflexes generated by Irritation of Mucous Membranes."

he terms the acute recurring form. In this the rigors occur every few days, with no regular interval. After four or five attacks of rigors and fever, it disappears, leaving the patient much lowered in health. The third form he considers distinct from the two former, and which he thought might be very properly termed chronic or continuous urinary fever. This form, he says, "Comes on very insidiously, not necessarily by any smart rigor, but with, perhaps, a little chilliness in an old man who has had defective power of passing urine for a very long time." At the end of one of his lectures he says, "I have never seen this continuous chronic form appearing in elderly men after long-standing obstruction of the urethra without advanced renal and uræmic disease."

Some writers emphasize the necessity for an examination into the condition of the kidneys before undertaking any operation upon the urethra or bladder as a precaution against serious urethral fever.

Belfield, in writing of the precautions to be observed before catheterism, says, "More frequent and more susceptible of injury are the cases in which there exists not an acute, but a chronic retention of urine in consequence of prostatic hypertrophy or stricture of small calibre."

He emphasizes the danger of complete evacuation of the bladder in cases of chronic retention; those who have had any experience in that line will doubtless appreciate the vast importance of the subject and the correctness of Belfield's premises. In another place he remarks as follows: "Before introducing a catheter it is important to ascertain as definitely as possible the condition of the urethra, the prostate, and the bladder. The possible existence of a stricture, or of a false passage from previous instrumental examinations; hypertrophy of the prostate, paresis, atony, or hypertrophy of the bladder; contraction of the meatus, and phimosis should all be the subject of inquiry, for if none of these exist, the dexterous introduction of the catheter can scarcely occasion any evil; while, in the presence of one or more of these conditions, even skilful catheterism may occasion serious results. The experience of every surgeon furnishes instances in which the simple skilful introduction of a catheter has been followed by more or less unpleasant results, ranging in severity from slight chill and fever to a general inflammation of the urinary tract,—cystitis, pyelitis, nephritis,—or to fatal anuria."

The literature of this class of diseases abounds in similar instances, which have happened even to the most distinguished and skilful of modern surgeons; and in warnings as to the possible disasters consequent upon the introduction of an instrument into the bladder. Yet but few, if any, of our standard text-books upon the subject make a very clear and decisive distinction between those cases which may be catheterized without danger and those in which disaster may be apprehended. In nearly all cases the danger is ascribed to the introduction of the instrument *rather than to the evacuation of the residual urine*,—the real element of peril. Whenever the catheter is to be introduced, in cases of retention of urine, in individuals who have stricture, enlarged prostate, or other impediment, which we may reasonably assume has caused dilatation of the bladder, care should be taken to evacuate not more than half of the urine, whose quantity can be estimated by palpation over the pubes; and through the rectum, by percussion of the abdomen, etc. If this rule were generally observed, the introduction of the catheter would not be held responsible for nearly so many inexplicable and unforeseen disasters as is now the case, and instances of urethral fever would be less numerous. As a solution of this perplexing problem, Belfield suggests that not more than two ounces of the residual urine be removed on the first use of the instrument; and that a saturated solution of boracic acid, equal in volume to one-half of the residual urine removed, be injected and allowed to remain, and that similar precautions be observed in introducing the catheter in cases of long-standing, contracted stricture. In this way, and thus only, he says, can we have an assurance of avoiding the most serious consequences. He illustrates the danger attending the removal of much urine in cases of chronic retention, by reciting a fatal case which came under his observation. In this case a man was admitted to hospital, suffering from acute retention of urine, caused by the effects of a debauch, superadded to an old and contracted stricture. After various and futile attempts with elastic catheters, a small, conical, silver instrument was introduced into the bladder, the effort occasioning trifling hemorrhage from the urethra. Nearly four pints of urine were evacuated. The catheter was used three times daily for two days, at the end of which time the patient had regained the ability to void urine. It had been decided to dilate the stricture, when, upon the third day

after admission, the patient had a severe chill, followed by fever, prostration, and the usual symptoms of the so-called typhoid condition. The urine became scanty and bloody. At the end of a week he died. The autopsy showed no recent lesion at the seat of stricture, but a hypertrophied bladder with well-marked trabeculæ, and a diverticulum just at the right edge of the trigonum, dilated ureters and pelvis. The bladder-wall was soft, swollen, and contained numerous abscesses, from the size of a pea downward; there was a perivesical inflammation, and a collection of pus between the bladder and rectum. The mucous membrane of the bladder was swollen, soft, injected, and at several places eroded. The kidneys were engorged with blood, and showed under the microscope numerous miliary hemorrhages. In short, the case was one of cystitis and pericystitis in an hypertrophied and habitually distended bladder. The cause of the inflammation was not nervous reflex action, nor injury to the urethra, but the immediate evacuation of all the urine contained in the bladder, or the use of an unclean catheter, or both, a result which might have been avoided had the catheter been carefully cleansed before introduction, *and withdrawn when half of the contents of the bladder had escaped.*

The case quoted by Sir Henry Thompson is another illustration, though in this fatal syncope followed the evacuation of six pints of urine from the bladder of an old man subject to chronic retention. The fatal syncope was, doubtless, due to the rapid removal of so large a body which had previously pressed on the abdominal veins and viscera.

If further evidence were necessary to illustrate the greater danger attending operations upon the urethra in those suffering from chronic retention, but more especially the fact that urethral fever, etc., so-called, to a greater or less degree, follows invariably operations upon this tract in such cases, the four cases reported by Swinford Edwards ("Annals of Surgery," vol. iv., No. 1) might be cited; also many others; literature abounds with similar cases. Of Dr. Edwards's cases, three were fatal, one recovering after a severe illness of a month or more, during which he was delirious at times. All were more or less subject to chronic retention, though one case was complicated by pyæmia following the operation. I will here briefly refer to their clinical history.

CASE I.—E. E., aged 22, a laborer; had difficulty in passing water for three years, during which time he has had retention four or five times. He attended as an out-patient at the West London Hospital for stricture. Previous to admission several attempts had been made to pass an instrument, but without success; "in fact, the manipulation must have been pretty severe, for he was bleeding from the urethra when first seen." As the house surgeon was unable to pass a catheter, no further effort was made, but the patient was sent to bed and ordered a hot bath. After this a railroad catheter No. 4 was passed, and four pints of urine drawn off. He had a severe rigor the next day, and died at 11.20 the following morning. At the autopsy a false passage was found.

CASE II.—Aged 65; a history of stricture of nine years' duration; had been in the habit of passing a No. 7 French catheter. Three strictures of urethra, one subpubic. They were treated by gentle dilatation; after meatotomy (one week after), he died on the fourth day. In the membranous section were found two false passages.

CASE III.—J. K., aged 31; with a dense, tight stricture four and a half inches from the meatus. He had suffered from stricture and occasional retention for five or six years, and for which external urethrotomy had been performed in the German Hospital three years previously. Internal urethrotomy by Dr. Edwards. After each act of micturition, patient sick. On the fourth day after operation, rigors developed, also high temperature. He died on the fifteenth day.

Post-mortem.—Kidneys more than normally vascular; a large congested patch in one; bladder somewhat dilated, but showed no signs of inflammation, etc.

In classifying these cases, Dr. Edwards puts the first under the head of acute urethral fever, caused by absorption of septic products, though nerve irritation, he thinks, may have played some part in the tragedy. The second case also he would place under the foregoing head. The three elevations of temperature which were manifested in this case, he says, were distinctly due to the instrumentation, and he believes the disease was caused by the local irritation of the nerves supplying the membranous and prostatic urethra, causing dilatation of internal vessels by reflex action. The death of the third case he believes was the result of pyæmia. It undoubtedly complicated the case, to say the least. The evidence of this was the pneumonic abscesses containing sanious pus, and

the plugging of the veins leading from the prostate to the internal iliac.

Regnald Harrison, in the Lettsomian lectures for 1888, in speaking of internal urethrotomy and urine fever in his first lecture, says, "Here an incision, limited to a few lines in length, is made in the urethra, which the patient for two or three hours is probably unconscious of. Then he is seized with a rigor, which terminates in fever and an elevation of temperature. As a rule, these symptoms decline in the course of a few hours, possibly to be repeated. More rarely the rigor and fever are followed by suppression of urine, convulsions, and speedy death, post-mortem examination failing to discover any reasonable or recognized explanation for these phenomena. These symptoms in slight degree, as a rule, more frequently follow internal urethrotomy, accidental wounds of the urethra, and the introduction of a catheter or bougie. Even the last-named operation, simple as it usually is, has proved fatal in the course of a few hours, with little or nothing to show in explanation. Here, then, as I have said before, we have a train of symptoms resembling ague, which are only called into existence in connection with lesions involving the urinary tract." He relates several very interesting and instructive cases. One, a young and healthy male, upon whom he had performed internal urethrotomy, was taken three hours afterwards with a rigor, followed by high temperature, convulsions, and suppression of urine, and in forty-six hours he was dead. Post-mortem proved nothing but that the operation had been properly performed. Another case, a boy, 11 years of age, ruptured his urethra by a fall, and had retention of urine for thirty hours before he visited him in consultation. A catheter was passed with some difficulty along the lacerated canal and retained, the retention of urine being in this way relieved. On the following morning he was found to have a temperature of 102° F., and to have passed a restless night. About four o'clock that day he was taken with severe convulsions, and was absolutely unconscious, his temperature being then 105° F. The fits recurred with much violence, attended with opisthotonos. He became comatose, and died at midnight, twenty-four hours after he first saw him and the catheter was passed. He remarks: "I could not help observing, so long as this patient had retention, he was comparatively safe; but, when an opportunity was afforded to the urine of coming and continuing in contact with the lacerated urethra, a process of acute poisoning seemed to commence, speedily terminating in death."

In 1874 a healthy middle-aged man was under his care for a tight urethral stricture, for which, in the course of treatment preliminary to dilatation, a metal instrument carefully passed was followed by some very slight bleeding. Four hours after, he had a rigor, with temperature of 103° F. This was followed by a succession of rigors, at intervals of from eight to twelve hours. For over fifty hours the amount of urine excreted was only four ounces. Pulse was quick and thready; the tongue dry and brown; there was occasional delirium. He recovered after ten days. He remarks further: "Illustrations such as these and others that I could quote seemed to indicate that the presence of urine in a wound, under certain circumstances, was capable of generating an aguish form of pyrexia, which I shall speak of henceforth as urine fever. I am aware that some authorities are accustomed to speak of all the phenomena I have just illustrated under the one name of urethral fever. Such a term I think misleading, inasmuch as it seems to connect the symptoms produced with the precise part rather than with the process, for wherever throughout the urinary tract urine can be placed under certain conditions, there can all the phenomena usually associated with the term urethral fever be produced." Believing that urine fever might be traced to the kind of contact existing between a wound and the urine, he concluded to test it in the following way: "Taking a number of cases of subpubic urethral stricture, which were unfitted for treatment by dilatation, I adopted the following procedure: Internal urethrotomy having been performed, and all obstruction being removed, so that a full-sized grooved staff could be placed into the bladder, the patient was placed in the lithotomy position, and a median cystotomy performed,—quite independent of the previous internal operation,—so as to admit a full-sized drainage-tube, such as I usually employ for this purpose, to be passed into the bladder. By this combination of internal and external urethrotomy, I treated a considerable number of urethral strictures of the worst type, with results which time has already shown have been eminently satisfactory, both so far as the immediate comfort of the patient was concerned and the permanency of the relief that was afforded. After a number of trials of this kind, I soon found

as was my drainage so was my freedom from fever; urine fever only occurred where the former was imperfect. When urine, even in very small quantities, was pent up in a recent wound, fever resembling ague invariably followed. When, on the other hand, urine was allowed to escape freely and continuously,—as after a lateral lithotomy,—no such symptoms were developed. It was further observed, with much uniformity, that in cases where it was impossible to obtain perfect urine drainage, the urine might, so to speak, be sterilized by local or general measures. This tended considerably to prevent the urine undergoing changes and yielding products which were calculated by their absorption to produce this special kind of fever."

He urges the great value of solutions of corrosive sublimate for injection into the urethra and bladder, both before and after internal urethrotomy; and observed that, after the above operation, the production or not of urine fever in some cases could be largely influenced by the administration of quinine. Boracic acid, it appears, is of great value as well. He refers to the statement of a recent writer, who in forty urethrotomies had but one case of urine fever, in which the precaution of sterlizing the urine by the administration of boracic acid had been accidentally omitted. He believes the disease to be essentially the result of an entrance or absorption into the system of an animal alkaloid of urethral origin, and refers to the researches and writings of Gautier, Peter, Bouchard, Brunton, and Brown concerning the development of animal alkaloids, both in the dead and living, in support of that belief. From the foregoing he takes the following deductions:

1. That the presence of urine in relation with a recent wound is necessary for the production of what is spoken of as urine fever.

2. That mere contact of urine with a wound is not sufficient for its production.

3. That the retention of fresh urine within the area of a recent wound is almost invariably followed by its development in a greater or lesser degree.

4. That when urine is placed under such circumstances, as have been last mentioned, the liability to the development of urine fever is greatly diminished when it is sterilized by local or general means.

5. That the retention of fresh urine, blood, and the *débris* of damaged tissue in the confines of recent wounds for a certain time, at a temperature of somewhere about 100° F., could hardly be possible without chemical changes taking place in the constituents referred to.

6. That there is a common origin for urine fever is rendered probable by the uniformity of the symptoms attending it, which, though differing in degree, are identical, whether following a surgical operation or *an accidental wound*.

Another fact of the utmost importance, to which he has directed attention, is that cases of rupture of the urethra, sequent upon injuries of the perineum, do best when treated by perineal section, with insertion of tube, and drainage of the bladder by that means, without regard to extravasation.

He says, "Where the canal is more or less lacerated, we see exemplified the most disastrous effects of permitting a wound to heal, subject to the irritation that constant contact with pent up urine is capable of exercising. Fortunately, as a rule, in these cases, retention of urine for a time averts the liability to acute septic intoxication."

Lydston has recently, from a clinical standpoint, divided the disease into six forms, a classification which seems rather far-fetched. He says, "The relation of organic and functional disturbance of the kidneys to urethral fever is a most intimate one. There is probably no case of obstructive disease of the genito-urinary tract, of long standing, which is unaccompanied by functional disturbance of the kidneys, and, in a large proportion of cases, there occurs later on actual organic change in the renal tissues. This condition of affairs is to be anticipated and given serious consideration in every case of chronic urinary disease. The immediate effects of the kidney difficulty may not be marked, because of the activity of vicarious elimination by the skin and bowels, the vicarious action of these structures constituting the means by which the system accommodates itself to the imperfect elimination of the constituents of the urine."

He records the following case in which sudden death followed operative interference with the urethra. One of his personal friends had performed urethrotomy upon an apparently healthy young man of 28 years of age. The stricture was located about three-quarters of an inch posterior to the meatus, and was divided under cocaine without any difficulty or pain whatever. A sound was passed every second day thereafter, each operation being preceded by the injection of a four per cent. solution of cocaine, the quantity used

being about two fluidrachms. About a week after the urethrotomy, the patient complained of considerable nervousness and insomnia, but this was not considered of any particular importance. On the ninth day an attempt was made to perform the usual operation of sounding and injection of cocaine, the patient meanwhile lying upon an ordinary surgical chair. The doctor left the patient for a moment, to obtain his sound and give the cocaine an opportunity to affect the urethra. He was called back in about a minute by the patient, who complained of dizziness, and immediately fell back on the chair in convulsions. Assistance was called, stimulants given, and the galvanic current used, but without avail, the patient dying in less than five minutes. At the post-mortem a thorough examination of all the vital organs was made, but everything was found perfectly healthy, with the exception of the kidneys, which were so extremely congested that they presented a bluish appearance, similar to that of the spleen. This fatal result, he says, was not attributable to the cocaine, but was evidently due to the sudden explosion of poisonous material, which had been gradually accumulating in the system, as a consequence of imperfect action of the kidneys, and the metabolic action of slight surgical shock upon the tissues. This condition of toxæmia gradually grew more pronounced, and was finally so severe that a comparatively slight irritation was sufficient to inaugurate a nervous explosion. Such an irritation was afforded by the mechanical effect of the injection of the cocaine, and it is probable that the introduction of simple water would have had a similar effect. The danger of the development of urethral fever is directly proportionate to the distance of traumatic or surgical injuries of the urethra from the meatus.

On the other hand, Dr. Nicholas Senn believes that as urethral fever, so called, follows injury to the urethra so rapidly, and only in persons whose nervous system is predisposed to it, there can be no doubt that it is only a manifestation of disturbance of the vasomotor nerves.

Dr. Roswell Park believes that the cause is to be found in the absorption of some poison—probably a ptomaïne—contained in the urine flowing over a wound; and this wound is usually a pretty fresh one, since a healthy granulating wound does not absorb nearly as well. For instance, we frequently see after external urethrotomy, that so long as a tube lies in the wound through which the urine can flow freely, no such fever supervenes; but if the tube be removed on the second or third day, before granulations have had time to form, so soon as the urine flows through the wound and comes in contact with its surface, for a day or two there will be more or less fever, sometimes quite high.

Mr. W. Mitchell Banks, in his clinical notes upon two years' surgical work in the Liverpool Royal Infirmary, referring to Holt's operation, says, "The majority of patients have certainly an attack of urethral fever for a day or so after its performance, but this can always be reduced to a very trifling matter, or even staved off altogether by the use of quinine and opium. On the morning of the operation the patient had two grains of quinine and a grain of opium, and after it two grains of quinine every two hours for perhaps five or six times. A great many of our patients in Liverpool are sailors, who have had African malarial fever, and they all declare that an attack of urethral fever is exactly the same thing in all its phases as a malarial attack, only rather sharper. These men invariably have the attack after dilatation, while others, who have never been abroad, often escape. The two forms of seizure being so absolutely identical in their phenomena, quinine, the specific for one, seems the most appropriate remedy for the other." Further, in reference to internal urethrotomy and the treatment of stricture, his ideas are worthy of repetition, and have been recently endorsed by Regnald Harrison. He says, "Of internal urethrotomy, except as applied to the meatus or the penile urethra, at a short distance from it, I confess I have considerable dread. This arises from having seen two thoroughly healthy men die from it in the hands of other surgeons, who certainly would not have died if they had been treated, say by gradual dilatation. The operation in each case was quite well done, but the patients died with symptoms of septicæmia. Now, this is a very dreadful thing, and I would rather have any number of patients wait a little longer for their cure than be subjected to so serious a risk. For, after all, everything that is accomplished by the urethrotome can be accomplished by the bougie or Holt's dilator; while to the very worst cases it is not applicable at all, and for them we have to fall back on Symes's external urethrotomy. I have treated a great many strictures, but I never, I am thankful to say killed anybody by treatment, and I entertair

a very strong view that nobody need be killed in the curing of his stricture, seeing that patience will ultimately triumph over all difficulties. I confess I may be somewhat prejudiced against internal urethrotomy, but the occurrence of the two catastrophes alluded to certainly shook my belief in it."

The following case occurred in my own practice:

J. H., aged 38, consulted me, December, 1887, with regard to the treatment of his urethral stricture. He said his trouble originated three years previously, at which time he suffered from acute retention of urine. He said the physician who attended him then forced his way into the bladder with a small sound. After the withdrawal of the sound, he bled profusely. Since that time, he says, he has not been able to urinate so freely as before. When I saw him he was urinating every half-hour, and passed but little urine after much straining. His meatus was much smaller than the average. Strictures were located as follows: quarter of an inch, three-quarters, and two inches from the meatus, all of which were of small calibre; these were dilated to No. 15, F. There was also a tight stricture of the membranous urethra. The meatus was cut at the time the strictures were dilated. It was my intention to perform internal urethrotomy later on. I was in hopes that with stretching and cutting of the strictures in front, some instrument might be gotten through the deeper one, which at this time was impervious to the filiform bougie.

The subsequent status of the case is as follows: Within eleven hours subsequent to the stretching of the strictures and cutting of the meatus, he had two rigors, and for three days he had two rigors in each twenty-four hours; as a matter of course each rigor was followed by high fever. After this they recurred but once in the twenty-four hours for two weeks. From this time on the intermissions were more marked, ceasing entirely eight weeks from the beginning. Twice during the first three weeks his temperature, subsequent to the rigors, rose as high as 105° F. Upon six occasions he was slightly delirious, and constantly complained of severe aching pain in his back. His urine, though examined thoroughly at different times, was comparatively normal.

For a week his condition was quite alarming. From the first large doses of quinine were given, and gradually increased, until, shortly before his recovery, he received, hypodermically and internally, about one hundred and ten grains of the bisulphate of quinine in the twenty-four hours. Several times as high as 60 grains of quinine were given in anticipation of a rigor, and, despite the huge dose,—the greater part (40 grains) of which was given hypodermically,—they recurred invariably. The whole canal, as far as the deep stricture, which had not relaxed any, was then injected by means of a catheter and syringe with corrosive sublimate 1 to 40,000. This change was made a few days previous to the last large dose of quinine. No rigors followed this change.

He continued to inject the urethral canal after each act of micturition. In the fourth week of his illness he was able to be up and walk about some. His ability to urinate had gradually improved during this period. He was now able to pass a greater quantity of urine at each act of micturition and retain his urine longer.

When I saw the patient last he said he was able to urinate freely, and could retain his urine so long as he desired. In this case all operative interference was done under thorough local antiseptic precautions. No antiseptic was given internally. The entire subject may be summarized as follows:

1. In operations for the relief and cure of chronic retention of urine, the complete evacuation of all the urine at first should not be permitted, but rather the withdrawal of only a few ounces, and the immediate injection of a solution of boracic acid or other mild antiseptic, in volume equal to one half the quantity of urine withdrawn, lessening with each succeeding injection the quantity of fluid thrown in, and increasing the amount of urine withdrawn. Thus, by regular gradation the bladder is emptied, and the circulation, in its abnormal walls, is accommodated by degrees to the new order of things. The same may be said of the ureters and kidneys. As a result, we have less shock, if indeed any; no suppression of urine; no hemorrhage from the urinary organs; and slight, if any, urine fever, so called.

2. Tight strictures of the membranous urethra are more successfully, and hence more safely, dealt with by perineal section. When associated with strictures of the pendulous urethra, the combination of internal and external urethrotomy is undoubtedly the best treatment.

3. The decomposition of blood, urine, and other organic matter in the bladder or urethra, may give rise to the phenomena through

the production of ptomaïnes; hence the necessity for antiseptic treatment, generally and locally.

4. The disease is more common among those who are predisposed to it by the nature of a peculiar nervous temperament.

5. In view of the fact that more or less shock attends all urethral operations, especially the forcible and rapid dilatation of old strictures with sounds; and as sudden death has followed even the gentle insertion of a sound, the calibre of which was less than that of the stricture, it is hence important that all practical precautions should be observed in every case of dilatation of a urethral stricture or strictures, with a view to avoiding, so far as possible, such effects, that unhappy sequel being more liable to follow rapid dilatation of old strictures when not preceded by internal urethrotomy.

6. It is also important to ascertain the condition of the bladder, urine, and kidneys before operating for stricture of any degree, and when these two organs are found extensively diseased, the greatest skill, gentleness, and patience is necessarily called for in the treatment of strictures. Further, when these organs are diseased, and we have to deal, in a given case, with several strictures of very small calibre of the pendulous urethra, two courses compatible with safety are presented, —viz., gradual dilatation alone, or internal and external urethrotomy, leaving a few days between the internal and external operation, the latter being done first.

7. Quinine, in any quantity, exerts no manifest influence over the course of the disease.

8. Boracic acid, internally, by its resolvent and antiseptic action, doubtless does exert a favorable influence upon the disease, and will prove a prophylactic if given some days before operating.

9. With a further view to prophylaxis, both before and after all operations upon the urethra,—even simple catheterism,—the canal should be injected with some mild antiseptic. This is more essential after each act of micturition, subsequent to internal urethrotomy.

10. When urine fever persists despite all treatment, or should, after any operative interference with the urethra, jeopardize the patient's life, perineal section should certainly be done.

11. I believe the disease in some instances to be one resulting from the escape of micro-organisms into the circulation. In others it is due to the absorption of their products at the points of operation. It is probable that in some cases the absorption of these products, and those of tissue disintegration, takes place at different points throughout the genito-urinary tract. In other words, in some it may be a septicæmia, in others a sapræmia. I think, so far as our knowledge goes, we may have both acting at one time.

DR. GUSTAF ZANDER'S MECHANICO-THERAPEUTIC INSTITUTE IN STOCKHOLM.

By Kate C. Hurd, M.D., Stockholm, Sweden.

THE term "health gymnastics" has originated of late as a sort of synonyme of the old word massage, and it includes all the now more fully developed principles of the latter. It comprehends both massage and active movements.

In Sweden, from the beginning of the present century, most careful attention has been paid to massage and to gymnastics, but there, as in other parts of the world, too often the masseur has had but little knowledge of the physiological principles underlying the *technique* of his art, and has promised more than he has been able to fulfil.

There has been another difficulty in the way. Physicians have not been sufficiently acquainted with the rules, theories, text-books, and claims of health gymnastics to give intelligent direction in this line of treatment, and they have too often trusted their patients to the hands of mere pretenders, who have done them no good. Hence it is that health gymnastics have been undervalued the world over by medical men, who have not taken the pains to understand them, while some of the laity have exaggerated the importance of these gymnastics, and the quacks have reaped the benefit of the disrepute into which the movement-cure has fallen.

To-day the best representatives of the healing art in Europe and America, realizing that the preservation of health and the prevention of disease by hygiene and exercise are of more importance than the mere administration of drugs to the sick man, are becoming interested, as never before, in health gymnastics. The day of nauseous doses has well-nigh passed away, and the memory of absurd therapeutic systems of by-gone times must fade into the twilight of tradition as the

medical world comes to appreciate the value of hygiene, hydrotherapy, electrotherapy, and exercise—I may add, as more correct habits of living prevail.

Institutions for health gymnastics in Europe are numerous. These belong to two schools, which, unfortunately, are continually in antagonism, although they ought to work in harmony. One of these is the mechanical school, of which I shall speak later. The other school employs only free movements, with little or no apparatus for its patrons who are strong, and in good or moderately good health; it also conjoins passive movements by the hand for patients less strong or suffering from some acute or chronic disease. There are numerous institutes of this kind in Europe, and especially in Sweden, the great centre and originating source of the massage schools.

The best institute for manual orthopedic massage in Stockholm is under the charge of Dr. Wide, who has made a long and earnest study of "orthopedics" in all its varieties, complications, and possibilities. In accordance with physiological and mechanical principles, each case is treated *per se* after a careful and minute examination and diagnosis. Dr. Wide himself writes the prescriptions for each patient, which consists of ten or twelve movements, to be given during each morning for a month. At the end of this time he re-examines the patient, and makes any alteration in the prescription which may be necessary.

At this institution, during the morning hours for women and children, an average of sixty patients are treated each day. The size of the three large rooms limits the number to seventy. Dr. Wide employs during these two morning hours ten female masseurs for the general manipulations, all of whom are graduates of the Central Institute, while any specially difficult or delicate movements, which require an intimate knowledge of the physiology, anatomy, or pathology of the diseased organ or tissue, are performed by Dr. Wide's first assistant, who is also a graduate physician.

In severe cases of spinal curvature, or of coxalgia, the patient wears, between the times of treatment, a corset, *made at the institute*, for his or her special case. Some of these corsets are made of thin wood, which, after a thorough soaking in water, can be easily moulded to fit any curve, and to this are adjusted any necessary straps, bands, or elastics for special tension; and generally an iron corset-fastener is attached to the front to increase the stiffness.

Many of these corsets are of light felt, and one of the newest varieties is of cambric, thickly starched, amply fitted with steels and rubber bands just where there is an indication for additional pressure. These are cool and light, and give good comfort and satisfaction to the unfortunate children who must wear them.

Plaster of Paris is used for corsets when absolutely necessary, also the *jury-mast*, and many of the American orthopedic inventions. It is very gratifying to find everywhere in Europe that the American orthopedists are held in such high repute.

The real founder of the Swedish movement-cure was P. H. Ling, who, some seventy years ago, devised the physiological and rational system of health gymnastics, which (with modern improvements) is so much in vogue to-day.

Gymnastics, considered as exercises of hygiene for strong and healthy persons, are well systematized in the German "turn schools," and the *Turn-Lehrer* is an admirable hygienist. The German system is, however, too severe for use as a therapeutic agency.

Any institute of massage, to do effective work, must, of course, be under the direct supervision of a competent physician.

The fundamental difference between the German and Ling schools is that the former employ *general*, the latter *special*, movements for particular muscles and groups of muscles. Both are based on anatomical and physiological principles, but does it not seem reasonable that, as far as gymnastics for the sick are concerned, much more good can be accomplished by the special method of Ling than by the general method of the German school?

It may be said that few physicians have the necessary time or strength to practise long series of movements on numbers of patients every day; this is especially the case with the busy general practitioner. It goes without saying that Swedish movements, especially when associated with hydrotherapy and electrotherapy, demand much time and patience, as well as almost continuous in-door confinement.

There is only one way out of the difficulty. If the Swedish movement-cure is good for anything, it must be practised by specialists. The general practitioner must understand the method, and must be able to indicate the needed movements in particular cases, but he must employ skilled and experienced mas-

seurs to execute the movements. I realize the fact that good masseurs are scarce.

It may even be necessary to obtain an expert, with a diploma, from one of the Swedish schools; such duly qualified specialists are ready to come to America whenever sufficient encouragement is given. At the Central Institute in Stockholm there is a two years' course in massage and free gymnastics, under Dr. Levin and Dr. Murray and other competent teachers. This course is open to fifty young men and women every second year, and is quite free. At the end of the two years the students graduate, having had a thorough course in massage, having treated a large variety of diseases at the clinics, such as nervous diseases, muscular, skin, circulatory disorders, and nearly all other chronic functional or organic disturbances. They are required to do much dissection, and recite anatomy every day; they study physiology and hygiene, and have many special lectures. Moreover, they acquire a love for the work, which sometimes leads the young men to feel that they can confidently diagnosticate and treat all diseases; but a word of praise is certainly due the young women, who are generally more aware of their proper sphere; and physicians find that they can commonly rely on their patience, earnestness, and conscientiousness in their work. It is not, however, possible always to find the good assistant who is sufficiently strong to treat many or all cases. He or she becomes weary because mortal, and at some times can work better than at others, however desirous of always being at one's best.

With these difficulties in view, Dr. Zander, of Stockholm, in 1865, conceived the idea of replacing the gymnast by *machines*, which could always be in order, could be evenly regulated to the amount of force required each day for each individual, and would never be fatigued. These machines would also be much cheaper in the end, and many times the usual number of patients could be treated in an hour.

Dr. Zander has naturally been often asked, as doubtless many are asking now, what he considers the chief relative advantages and disadvantages of the *mechanical gymnastic system* and the *Ling system of hand massage?*

To this question he replies by a long letter, printed in Dr. Hermann Nebel's "Bewegungskuren, mittelst Schwedischer Heilgymnastik und Massage,"* Frankfort-on-the-Main, 1889, of which there are a few sentences that I may quote here:

"Physiology teaches that the law of organic development is that of gradual growth. An increase of muscular strength is not possible unless the work done which causes the increase in growth is proportionately increased, and is adapted to such development from the first. Neither the muscle nor its work must lose this relation, otherwise wasteful expenditure results. . . . Therefore it is necessary, in prescribing a passive or active movement for a certain muscle or group of muscles, that one should know just what the 'lift' is, and its relation to a certain weight. This can be easily determined by means of weights in the carefully-graded machines. If at one time the muscle power is greater or less than at another time, having once determined the standard, it is very easy to increase or diminish the leverage of the weight."

Cannot this be done equally well by the manual massage?

Dr. Zander answers no, "Because the resistance of the machine is so carefully adjusted to the maximum and minimum of the amount of force displayed, and is marked by a fine scale, which never varies."

According to the principles of the lever, the effect of a movement is always strongest at its middle point, and as the movements of the body are all those of levers, it seems reasonable that a machine, consisting of a weighted lever carefully adjusted, parallel as far as possible with the human lever to be exercised, must give the proper kind of a movement,—*i.e.*, least at beginning and end, and greatest at the middle.

It would be almost impossible for a masseur to adapt his strength exactly to the varying strength of the patient, or to give the muscles their exact action every day, as his own muscular powers vary with his fatigue.

A Zander lever-machine can easily remedy this fault, as above stated. The patient always holds his prescription-card in his hand, on which is marked the strength of the movement on the day of examination, and from that mark as a guide the experienced assistant can raise or lower the weight, as seems expedient, in proportion to the strength of the patient. A machine which depended for action upon a spiral spring could not be made to answer this purpose, for with a spring the strength of the movement is greatest at its end. The motion is always

* "Movement-Cure combined with Swedish Health Gymnastics and Massage."

smooth and even, the lever of the left side is as strong as that of the right side, which is not apt to be the case with the hands of a masseur.

By the mechanical method not only can the strength of the muscles be determined, but also the power of the heart and respiration. If by the movement the heart is much increased in rapidity, or is made irregular, or if the respiration is not slow and even, then is the movement too strong, and it can be diminished to the proper point. Again, if the movement seems very light in the morning when taken, but is followed in the evening by any unusual weariness, the resistance must be lessened on the following day, for a movement given badly, or out of proportion to the needed strength, can only be productive of harm.

Dr. Zander, of course, must employ masseurs to give movements by hand as well. There are many cases where the machine must be supplemented by the hand, especially if the patient be feeble or suffers acute pain from some motion of the machine.

The machines are divided into three classes, giving—

1. Active movements, requiring more or less effort on the part of the patient.

2. Passive movements, in which the patient is simply operated upon by the machine, as in the various processes of chopping, hacking, rubbing, shaking, trembling, kneading, etc. These latter are all moved by a powerful (12-horse) gaso-motor.

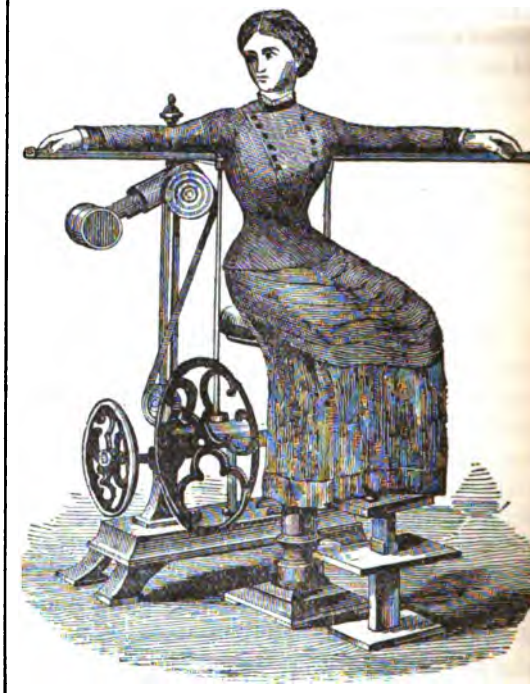
3. Machines, mostly passive, exclusively for orthopedic treatment. Their essential *modus operandi* for treatment of scoliosis is as follows: The patient reclines or lies in such a position as to obliterate any deformity as much as possible; at the same time irons press against the convexities of the spinal curves, with a given power or weight. This position is continued for periods of five minutes several times during a morning, and most remarkable results, in the complete cure of scoliosis of long-standing, have been derived from this application of mechanical principles to pathology.

The active machines are simple in construction, all made of cast iron, and their weighted levers are very delicately adjusted and finely graduated as to scale. (See Fig. A, which is one of the machines for arm adduction.) With all of the movements it is essential to take deep and regular respirations.

Fig. B, for foot-rolling, exercises all of the extensor and flexor muscles of the ankle; the blood is made to circulate well through the whole foot.

The machine numbered C is for move-

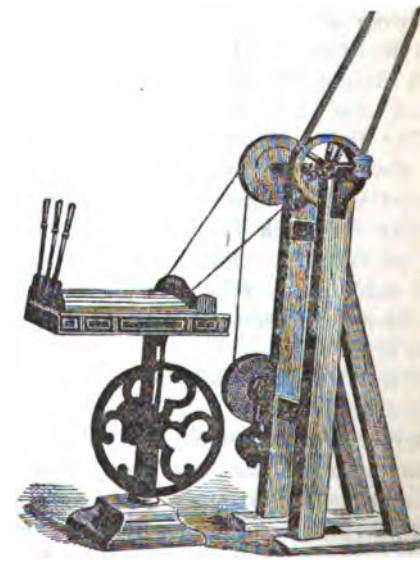
FIG. A.



ments of the trunk. (See Fig. C, which exercises the muscles of trunk and abdomen.)

Fig. G is one of the passive machines, for

FIG. B.



chopping or hammering. These give good surface circulation, soothe aches, and stimulate the whole body.

The vibratory machines are especially good for tired nerves and muscles, for cold feet, for an aching back, and cause the heart to beat less rapidly, owing to the lessened pressure of the blood in the great vessels.

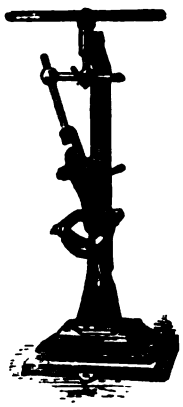
Other machines, like the movement of horseback-riding, are thought to be beneficial in reducing adipose tissue.

pieces pull slowly upward and backward the axilla of the patient, and with this naturally the whole *length* of the chest is much increased; the cushion presses on the back to increase the *breadth* still further. This motion is given in a slow, respiratory rhythm, and a patient cannot do otherwise than take good, deep, full inspirations. No superficial

FIG. C.

Trunk-rollers are good as strengtheners of the abdominal muscles; at the same time they increase the abdominal circulation and intestinal movements.

FIG. G.



Every prescription contains near its end a respiratory movement, given generally by a large passive machine, which consists of two curved pieces of iron, which, by the raising or lowering of the stool on which the patient sits, are made to fit under the axilla; there is also a cushion, which presses on the back between the scapulæ. When the machine is set in motion, the two under arm-

or uneven breathing is possible, and only very occasionally is a masseur found who can give this movement as well as the machine.

There are a few general rules for prescribing the movements, which Dr. Zander's experience has taught him. The exercises are arranged in groups of three, with a period of five minutes for rest between each group. One of these three may be an arm movement, one a leg movement, and one a passive or orthopedic movement. If a patient is strong, he may have a third active movement, or, if weak, a second passive movement. At the commencement, the movements are taken very lightly, and if at any time of the day following excessive fatigue is felt, the movement is diminished in force.

On the prescription-card is given the number of the machine, the weight to be used, and any direction as to position. In case of a scoliosis, the patient probably requires one of the variously-angled wedge-shaped seats to be placed on the stool of the machine while he takes his movement. All of these points as to the mechanical rules Dr. Zander indicates carefully in the prescription, and his competent assistants are faithful in carrying them out.

Often there is a case of nervous prostration

where the patient experiences great fatigue and neuralgic pains after the first day's movements, and for a month, perhaps, there seems to be little improvement; when, quite unexpectedly, there comes a relief from the symptoms, and the patient feels as well as after several months at a rest-cure. In such a case great care in the prescriptions must be taken, and often a rest-cure is needed first.

A patient may never drop a movement which seems to him useless or too severe, without the consent of the physician who has written the prescription.

The patient shall wear no corsets, no constricting-bands, shall take a glass of milk and a cracker before going to the gymnasium, but nothing more hearty may be eaten within an hour and a half.

The Zander Institute in Stockholm grew slowly at first, and, as a method of curing disease, it was regarded with suspicion for some time. The diseases most commonly treated now are chronic heart- and lung-diseases, catarrh of throat, stomach, and intestines, constipation, hemorrhoids, paralysis, joint-diseases, sprains, rheumatism, all kinds of deformities, etc.

One special machine for uterine prolapsus has been tried now for over a year, and has given very satisfactory results. It consists in a peculiar leg adduction with resistance, and the movement works especially upon the muscles at the floor of the pelvis and the vagina, strengthens also the uterine muscles and ligaments, and increases pelvic circulation.

One of the patients treated had been long troubled with a large prolapsus uteri. She had been variously "doctored," but without much effect. Her first prescription from Dr. Zander was very simple. It consisted merely in a *passive body-turning*, to give action to the muscles of abdomen and sacrum and lumbar region in particular; the second movement was a *sitting-leg-separation*, with resistance,—this one *active;* the third was *sacral* percussion; and the last was a respiratory movement.

No internal treatment was given, and from the beginning the uterus replaced itself in the vagina, and remained until forced down by some strain; the condition gradually improved, so that more and more severe strains were necessary to cause the prolapse to return; the prescriptions were increased in length and severity, the chief movements being still the leg adduction and abduction, and pelvis rotation, with sacral percussion. It is now three months since the first treatment, and only a very severe strain causes the return of the prolapsus. Dr. Zander feels confident that what has been done in this case can be done in most cases, and, if so, gynæcologists will welcome the machine.

Many young anæmic and chlorotic girls derive a great deal of benefit from the exercises, and many women during pregnancy take the movements. They find that their general health is much improved, and that their labors have been much easier than previous ones, and, in fact, relatively painless.

If with the sound body comes the sound mind, and if with the sound mothers come the sound children, the healthy generations, and happy families, for promoting that result alone would the Zander Institute receive worthy praise.

For the healthy child, the Zander machines are a capital means of producing a harmonious development of the whole growing body. For patients who need special development of special groups of muscles, the machines are admirably adapted; but for free, graceful, and rhythmical movements of the body, Ling's free standing gymnastics must be taken with the special movements of the machines, or after the body has been prepared by the latter for the balance movements of the former.

The Mechanical Institute of Stockholm contains ninety-five machines, thirty-five of these being duplicates of those most used. This apparatus is arranged in four large halls, full of windows and sun in its season. The machines are all nicely painted, and upholstered in dark green plush, making the rooms very attractive.*

---

* The apparatus of the Mechanico-Therapeutic Institute of Stockholm consists at present of sixty-seven machines, viz.:

Seventeen machines for active arm movements.
Eighteen machines for active leg movements.
Nine machines for active trunk movements.
Twenty-three machines for passive movements.

The passive movements are worked by a steam-engine of about 5 horse-power.

By means of these machines the following movements can be executed:

1. Flexion of the arms (at the elbow-joint).
2. Extension of the arms (at the elbow-joint).
3. Twisting of the arms (at the shoulder- and elbow-joints).
4. Flexion of the arms (at the shoulder-joint).
5. Extension of the arms (at the shoulder-joint).
6. Flexion of the hands.
7. Extension of the hands.
8. Adduction of the arms.
9. Abduction of the arms.

There are two physician's offices, a large and comfortable reading-room, a room for electricity and manual massage, a small room for the mineral-water, dressing and toilet-rooms.

The engine or gaso-motor is 12 horse-power, moving thirty-one or thirty-two machines.

There are at the institute three physicians, many instructors, also twelve boys and the same number of girls to put the machines in order, etc.

The institute is open from October 1 to May 15 daily, four hours for men and two or three hours for women.

There are now many Zander Institutes in Sweden and Denmark, Russia, and Germany, one in London, one in Baltimore, and one in Buenos Ayres. The manufacturers are now making a full set of machines for a promised institute in New York City which is to be in charge of a foreign physician, who has made a long and special study of the Zander Institutes of Europe, and hopes to rival the Friederichsbad in Baden-Baden, and the new Nebel Institute in Frankfort-on-the-Main.

The machines are never sold unless they can be controlled by physicians.

When the Institute opened, in 1865, it completed its first year with one hundred and thirty-two patients.

During the past year (1888–89) six hundred and nineteen patients were treated for variable lengths of time. It is probable that wherever these institutes are opened, the growth and success will be the same, provided scientific and competent physicians have charge of them.

10. Upper and forearm extension of the entire arm directly upward.
11. Upper and forearm flexion of the entire arm directly downward.
12. Flexion and extension of the fingers.

13. Flexion of the legs (at the knee-joint).
14. Extension of the legs (at the knee-joint).
15. Twisting of the legs outward.
16. Twisting of the legs outward and inward.
17. Flexion of the legs (at the hip-joint).
18. Extension of the legs (at the hip-joint).
19. Flexion of the feet.
20. Extension of the feet.
21. Adduction of the legs.
22. Abduction of the legs.
23. Hip-knee-foot extension and flexion.
24. Hip and knee flexion.
25. Hip and knee extension.
26. Foot-rolling.

27. Flexion of the trunk (in the lying position).
28. Flexion of the trunk (in the sitting position).
29. Extension of the trunk (in the sitting position).
30. Extension of the trunk (in the standing position).
31. Twisting of the upper trunk.
32. Twisting of the lower trunk.
33. Lateral flexion of the trunk.
34. Extension of the neck.

35. Shaking of different parts of the body.
36. Chopping of different parts of the body.
37. Tapping on the head.
38. Kneading of the abdomen.
39. Kneading of the arms.
40. Rubbing of the feet.
41. Rubbing of the hands.
42. Rubbing of the back.
43. Rolling of the trunk.
44. Swinging of the trunk.
45. Balancing of the trunk.
46. Expansion of the chest.
47. Orthopedic pressures.

STRYCHNINE PILLS—ALKALOID vs. SULPHATE.

By H. F. Meier, Detroit, Mich.*

A PERUSAL of the article by Henry M. Field, M.D., Newton, Mass., in the Therapeutic Gazette for January, 1890, will undoubtedly have a tendency to some extent to shake the confidence, in this pharmaceutical preparation, of those upon whom we place our dependence in emergencies and disease. The physician, with his accumulated experience, is our only resource when it is desired to continue our physical existence beyond the period so frequently vexed with interferences, dangerous or destructive. The relation of current remedies towards our own organism assumes, therefore, an importance commensurate with the recognized life.

While the move of Dr. Field is certainly in the right direction, it impresses one with about the same sense of futility as is involved in the endeavor to convince the medical world of the advantage or superiority of quinine muriate over the sparingly soluble di-quinine sulphate.

The universe is full of faults; so is pharmacy; so is physic, particularly when presented in the form of pills, constructed as per the Pharmacopœia or accepted formularies. The endeavors of pharmaceutical investigators have for years been directed towards a reconciliation of the physical problems and difficulties presented with therapeutic requirements. It becomes a matter of pleas-

* Laboratory of Parke, Davis & Co., Detroit, Mich.

ure, therefore, to report upon the behavior of alkaloidal pills, and especially those of strychnine (alkaloid), as now obtainable from our American manufacturing pharmacists, who have devoted especial attention to the study of excipients and constituents with a view to attaining the highest possible state of perfection.

The pills tested were treated with the solvent indicated by Dr. Field,—that is, plain water and only a limited quantity. The testing apparatus described in the *Druggists' Bulletin* of July, 1889, was used for the purpose.

The solubility of powdered strychnine in water is stated to be 1 in 6700 parts of ordinary temperatures. The pills examined disintegrated entirely both shell and interior in from fifteen to thirty minutes at the temperature of the body. The fact of rapidity of disintegration being determined, further questions of solution and absorption can now be considered. Taking the largest size of pill examined,—$\frac{1}{10}$ grain,—the relation of the alkaloid to the fluids usually contained in the stomach at any one given time (say about 4 ounces) would be 1 : 28,000.

The fluids there present keep constantly changing, and we are justified in assuming that in apepsia the patient naturally imbibes water enough to supply the deficiency of customary secretion, should such a condition exist. A provision is thus made for the presence of enough fluid to insure results. An absolutely empty stomach is a thing unknown in the domain of physiology, unless the possessor is menaced by starvation,—that is, entire deprivation of food and water. As related to the professions of medicine and pharmacy, Dr. Field has really done both a service, because his article will tend to invite critical comparisons and needed investigation. The outcome will be simply the demonstration that modern pharmaceutical ingenuity has conquered existing difficulties, and that the alkaloidal pills, as now presented, are in the front rank, as far as their quality, permanency, and solubility are concerned.

Coming now to the practical examination, after demonstrating that pills can be made so as to disintegrate in the remarkably short time named, we are likewise able to show that an exceedingly limited quantity of fluid (one ounce used in the tester) will give a solution yielding all the characteristic reactions of strychnine. When the minute quantity of alkaloid ingested is presented to the fluid prevailing in the stomach, even if this be non-acid, its finely-divided condition cannot fail to insure solution.

Tested from a physiological and chemical stand-point, very satisfactory results can be offered. The plain water solutions obtained with one ounce to one pill of $\frac{1}{10}$, $\frac{1}{50}$, and $\frac{1}{100}$ grain, respectively, after they had been agitated for thirty minutes at 100° F., were filtered, and giving evidence to the taste of varying degrees of bitterness, also gave precipitates with Mayer's reagent, differing accordingly in quantity.

It may be here noted that in applying Mayer's test, a number of organic substances are capable of influencing the result, either by increasing the quantity of the precipitate, or modifying its character. In comparing, therefore, with pure strychnine of known proportion to a control liquid, these facts must be taken into consideration.

After solution, the degree of dilution with the above pills would be: $\frac{1}{10}$ grain to 1 fluidounce 1 : 9600; $\frac{1}{50}$ grain to 1 fluidounce 1 : 24,000; $\frac{1}{100}$ grain to 1 fluidounce 1 : 48,000.

In testing with Mayer's reagent, the method of procedure was as follows: One of the pills is dissolved in a fluidounce of distilled water at the ordinary temperature. This is best effected by crushing the pill in a mortar, with the aid of a little pure white sand. If 10 c.c. of the filtrate are now treated with an excess (1 c.c.) of Mayer's n. 20, with the addition of two minims of acid sulphuric, dilute U. S. P., it will be found that the amount of precipitate or turbidity will correspond with that obtainable from a control liquid, prepared from an equivalent quantity of the sulphate.

Inasmuch as Mayer's reagent is a precipitant of albumen, being presented for the detection of this element in the form of test tablets for urinary examination, it should naturally be expected that vegetable albumen would also afford a precipitate. Such is really the case. I find that an aqueous dilution of quite a number of fluid extracts, which are known to be free from alkaloids, will yield, after dilution with water, filtration and acidulation, precipitates with the reagent named. Even an infusion of wheat flour 1 : 100 of cold distilled water, will yield a precipitate after slight acidulation. Also glucose, which is present in so many vegetable extracts, is capable of exerting an effect in modifying the results, so that extremely critical examinations or comparisons require, as a preliminary step, the isolation or separation of the alkaloid. This feature is, of course, already recognized.

Practical points in this matter, from which we can derive a deserved advantage are these: Having long ago recognized the existence of difficulties inherent to the toxic alkaloids, especially noticeable when presented in pill form, and which impose conditions pharmaceutically unfavorable, naturally the best energies and constructive ability of scientific experts have been taxed to surmount all those of a physical and chemical nature.

The superiority or excellence of a properly made strychnine pill is readily demonstrable without apparatus. If the particular pill under consideration (any size) be allowed to lay in water, kept at a constant temperature of 100° F., it will be found that in fifteen to twenty minutes the entire pill is resolved, without necessity of agitation, into a mushy condition. The nature of the excipient should allow free and ready absorption of water, thus providing for prompt disintegration. If we now test the structure or coherence of the pill, by gentle pressure with the end of a rod or stick, it will be found entirely soft and ready to present its contents to the gastric secretion or fluids, as the prescriber intended.

If we allow the occurrence of another natural factor,—that is, gentle attrition and propulsion of the contents of the stomach,—it is inevitable that solution of such a pill must ensue, and the intended effects be secured.

While such pills are obtainable, it is, therefore, needless to disturb a deserved confidence.

Regarding the cumulative action referred to, it should not be overlooked that this feature is inherent to the drug itself. The following extract from "Brunton's Pharmacology," pages 41 and 42, has a bearing on this side of the subject:

"If a substance be naturally so slowly excreted from the body that the whole of the dose in ordinary use is not excreted before another is given, the amount present in the body will gradually increase, just like the curare in Hermann's experiment, and will produce an increasing or cumulative effect. Examples of this are to be found in metallic preparations, such as those of mercury or lead, which are excreted very slowly, or in some of the organic alkaloids, if given in sufficiently large and frequent doses. The sparingly soluble alkaloids, which form stable compounds with the tissues, and are thus slowly eliminated, are more liable to prove cumulative." "Digitalin appears to diminish the secretion of urine, by causing a powerful contraction of the renal vessels, and in large doses may completely arrest the secretion of urine, and probably also the circulation through the kidneys. Strychnine has a similar action on the vessels."

The writer's personal experience with the remedy in question bears out the possibility of a cumulative action occurring, even when the salts of strychnine are administered in solution. Some years ago, having been directed to take elixir of calisaya, iron, and strychnine, in teaspoonful doses, three to four times a day, even at the end of ten or twelve days the medicine had become almost intolerable, owing to symptoms characteristic of strychnine accumulation, such as twitching of the muscles, an ineradicable bitter taste in the mouth, etc.

TREATMENT OF ACUTE PNEUMONIA BY INHALATIONS OF CHLOROFORM.

DR. PHILLIPI states that in a case of pneumonia occurring in an alcoholic subject, almost in the stage of dissolution, he has seen a remarkable improvement following inhalations of chloroform (*Bulletin Général de Thérapeutique*, January 15, 1890). The case was that of a man of 60 years of age, with a marked history of alcoholic intemperance, who had been affected with acute articular rheumatism for six years preceding. On the fifth day of his attack of pneumonia there was collapse, loss of consciousness, Cheyne Stokes respiration, cyanosis of the face, pulse small, irregular, and 96 beats to the minute. Subcutaneous injections of ether produced no reaction, and the author was led to the administration of a mixture of chloroform and alcohol. The patient at once made a number of deep inspirations, but there was a sudden arrest of respiration, and the chest was then rubbed with the mixture, and at the end of an hour there was no longer any appearance of cyanosis, the pulse was stronger, the patient regained consciousness, and collapse had entirely disappeared. The author administered in this way about two ounces of the mixture of chloroform and alcohol, and he attributes the rapid disappearance of these grave complications to the effects of the chloroform. The procedure is one, however, which seems to be attended by considerable danger, and it is doubtful whether, even in the reported case, the improvement was attributable to the inhalation, and not to the external use of the chloroform as a revulsive.

The Therapeutic Gazette

EDITED BY

ROBERT MEADE SMITH, A.M., M.D.,
Professor of Comparative Physiology, University of Pennsylvania,

PHILADELPHIA.

GEO. S. DAVIS,
Medical Publisher, Box 470,
DETROIT, MICH.

Philadelphia, 714 Filbert Street.

SUBSCRIPTION RATES FOR 1890.

(Journal increased to 72 pages each month.)

THERAPEUTIC GAZETTE (postage included).....$2.00
THERAPEUTIC GAZETTE with MEDICAL AGE..... 2.50
THERAPEUTIC GAZETTE with AMERICAN LANCET 3 25
THERAPEUTIC GAZETTE with AGE and LANCET... 4.00

Foreign subscriptions may be ordered through our agent in England, Mr. H. K. Lewis, Medical Publisher and Bookseller, 136 Gower Street, London. Price 10s. Remittances may be made either by Postal Order or Stamps.

Price to Foreign Subscribers direct (postage included), $2.50 (10 shillings). English postage stamps received on remittances.

Editorial communications should be addressed 332 South Twenty-first Street, Philadelphia. Articles intended for the Original Department of the GAZETTE will be accepted only with the understanding that they are contributed to it exclusively.

Business communications should be addressed to the Publishers.

Leading Articles.

THE REPORT OF THE HYDERABAD CHLOROFORM COMMISSION.

WE print on another page the conclusions to which the second Hyderabad Chloroform Commission has arrived from the prosecution of four hundred and thirty experiments on different forms of animals as to the mode of action of chloroform, the dangers attending its use, and the way in which it is stated these dangers may be avoided or overcome. The history of their results is an extremely interesting one, as they claim to overthrow all reasons for the belief, almost universally held in this country, at least, and to a great extent in England, as to the dangers attending chloroform narcosis. In 1888, Surgeon-Major E. Lawrie, the resident surgeon in Hyderabad, applied to the local government for the appointment of a commission to investigate the action of chloroform, as the result of his own experience and his physiological experiments proved that chloroform invariably arrests respiration before stopping the heart; and that if care be taken to either prevent the arrest of respiration or to commence artificial respiration as soon as natural respiration ceases, that death will never be produced by the use of this anæsthetic. The commission, after prosecuting a large number of experiments, announced, as the conclusion drawn from their work, that "chloroform may be given by inhalation with perfect safety, and without any fear of accidental death, if only the respiration is carefully attended to throughout."

As might be expected, these statements, not being based on fully published details of their investigations, and owing to their being directly contradictory to the results arrived at by the committees appointed by the Royal Medical Chirurgical Society and by the British Medical Association, and of such observers as Snow, Claude Bernard, McKendrick, and others, were regarded with considerable suspicion. The *Lancet* especially assumed a position of marked incredulity, and published several editorials and annotations, questioning both the reliability of the experiments and the justifiability of the sweeping conclusions which the Indian commission drew from them.

In a letter to the *Lancet* of May 11, 1889, Dr. Lawrie, while complaining as to the criticisms on the committee's work, called attention to the fact that, up to the time of his death, Syme taught that "we are guided as to the effect of chloroform not by the circulation, but entirely by the respiration," though he himself shows the difficulty attending the acceptation of this doctrine by the second statement that Erichsen teaches "that when fully anæsthetized the patient requires the most careful watching by the person who administers the chloroform; his finger should never be off the pulse, nor his eyes taken away from the countenance of the patient." These opinions of two most eminent surgeons are absolutely irreconcilable; one or the other must be totally right or totally wrong, and as Dr. Lawrie firmly believes that the principles taught by Syme are correct, he applied for the appointment of a second commission, which, in addition to the original members, should contain a representative appointed by the *Lancet*. The *Lancet* accordingly nominated Dr. Lauder Brunton, probably the most eminent teacher and experimenter in pharmacological work in England. Dr. Lauder Brunton's appointment is especially noteworthy, and the conclusions of the commission derive special importance from the fact that at the time of his appointment Dr. Lauder Brunton held views as to the action of chloroform directly opposed to the conclusions of the first Hyderabad Commission, since he

maintained that one of the dangers resulting from chloroform is death by stoppage of the heart.

The report of the second Hyderabad Commission is based upon four hundred and thirty different experiments made upon dogs, monkeys, goats, and horses. The conditions of the experiments were varied in every conceivable manner, some of the experiments being made on dogs just as they were caught, others at various intervals after having heavy meals of meat or farinaceous food or fat, others fasting, others after the administration of Liebig's extract of meat, coffee, rectified spirits of wine or ammonia. Most of these animals were healthy, but some of them had cardiac disease, and in many the heart and other organs were rendered fatty by the previous administration of phosphorus. In a large number of cases morphine, strychnine, and atropine, singly and in combination, were given by subcutaneous injection at intervals before the inhalation was begun. Chloroform was given with and without inhalers, in the vertical and recumbent positions, in glass and wooden boxes; in large and small doses, by being pumped into the trachea with bellows; and, in fact, in every way that could suggest itself to the commission.

The statement is made that in one respect the results were absolutely uniform; in every case where chloroform was pushed, the respiration stopped before the heart. Further, they found that if artificial respiration was commenced within thirty seconds after the cessation of respiration, it was nearly always successful. If it was not commenced within thirty to sixty seconds, it was very seldom successful, and always unsuccessful if it was not begun until after sixty seconds. They found that the success of artificial respiration in restoring the natural breathing was less constant after respiration had been stopped by chloroform in cases where a subcutaneous injection of morphine was administered before the inhalation was commenced.

Several other points brought out by their experiments are especially worthy of attention. Thus they confirm the statements very generally made as to the reduction in blood-pressure from the administration of chloroform, but they claim that this result, when the chloroform is given diluted in air, is a gradual one. This result therefore would seem to be in accord with the results attained by Bowditch, who attributes the low blood-pressure to dilatation of the blood-vessels produced by paralysis of the vaso-motor centre. There is another paragraph, however, of their report which does not seem thoroughly to be in accord with the sweeping character of their conclusions as to the safety of chloroform,—that is, that the involuntary holding of the breath, which must invariably occur when an inhaler saturated with chloroform is first applied to the face, will result in a sudden fall of pressure, with marked slowing of the heart, and the gasping respirations which succeed this holding of the breath will often cause a very rapid inhalation of chloroform, with immediate insensibility and a rapid fall of blood-pressure, which quickly becomes dangerous. It is true that the committee caution against the sudden application of undiluted chloroform, and would, perhaps, claim that these results could not take place if it was properly administered; but the very fact that such results can follow the very first inhalation of chloroform constitutes one of the dangers of this anæsthetic which has laid it open to such serious distrust.

On the other hand, they make the statement that failure of the heart, if such it can be called, instead of being a danger to the animal, will prove to be a positive safeguard, by preventing the absorption of chloroform from the lungs, and a more rapid propulsion of the chloroformed blood to the medulla oblongata, and consequently to a more rapid paralysis of the respiratory and vaso-motor centres and precipitous fall in the blood-pressure, such a condition being produced in some cases by ether, or division of both vagi, or by a full dose of atropine.

A similar state of affairs, they claim, follows slowing of the heart from pneumogastric inhibition, a theory which has frequently been accepted as explaining the danger of chloroform anæsthesia. This they claim to act in the same way, and that the controlling influences of the pneumogastric nerve upon the heart is a safeguard against the absorption of an overdose of chloroform, and that it is the *exhaustion* of the nerve which is dangerous. Further, they maintain that complete stoppage of the respiration always means that an overdose has been administered, and carefully watching the respiration and stopping the administration of the anæsthetic the minute that any disturbance appears should prevent any accident. Again, another conclusion which revolutionizes apparently the teaching of previous experience is that chloroform has no power of increasing the tendency to either shock or syncope during operations. If shock or syncope from any

cause does occur, the commission claim that it prevents, rather than aggravates, the dangers of chloroform inhalation; so also a hemorrhage, which may be dangerous in itself from reduction of blood-pressure, they claim in no way affects the action of chloroform, except in so far that a patient who has been nearly bled to death will require less chloroform in his system to put him in a state of anæsthesia.

These are the more important points brought out in the examination of their report. We can have no hesitation in admitting that their results seem to be absolutely conclusive as far as they go, although we would most decidedly qualify their sweeping conclusions as to the absolute safety of chloroform, as first claimed by the *Lancet*, as perhaps tending "to inculcate a disregard of the heart as a factor in chloroform dangers, and so do harm and provoke a slipshod carelessness in the use of that valuable anæsthetic." Assuming that their conclusions are absolutely correct, all that they prove is that in the pariah dogs of India chloroform arrests respiration before it stops the heart. We cannot acknowledge, however, that this negative result in the heart can vitiate the observation so often made by ourselves and many others that in large doses chloroform may arrest the heart before the breathing stops or may stop both simultaneously. We thus maintain that the statement that "however concentrated the chloroform may be, it never causes sudden death from stoppage of the heart" is absolutely unwarranted.*

Further, even their experiments show that a second's carelessness or overprolongation of the administration of the anæsthetic, though it be but for an instant, may end fatally. This fact certainly does not warrant the statement that "If the above rules be followed, chloroform may be given in any case requiring an operation with perfect ease and absolute safety, so as to do good without the risk of evil."

Thus the question still remains whether an anæsthetic which does not demand so many precautions, whose neglect may prove suddenly fatal, is not the safest after all. The commission prove that in their experiments chloroform first arrested the respiration before acting on the heart; and even though this were universally true, it would only reduce the dangers attending its use, not remove them.

We can scarcely believe that death from the use of chloroform has become avoidable, or that future deaths from this anæsthetic would indicate carelessness on the part of the administrator, and *that* must be the inevitable conclusion if the sweeping conclusions of the commission are accepted. We should think that their labors, together with the record of *accidental* deaths which occurred during their own experiments, would go far to make a surgeon hesitate to use an agent which undeniably may prove fatal, and which, if the commission is regarded as authority, would, in the event of a fatal issue, make him liable to the charge of criminal carelessness.

In conclusion, we would call attention to a paper by Ostertag, of which we publish an abstract on another page, which opens an entirely new line of investigation as to the action of chloroform.

* Since the above was in type Drs. H. C. Wood and H. A. Hare have published in the *Medical News*, February 22, 1890, a number of experiments which offer the *positive* proof, in opposition to the *negative* statements of the commission, that chloroform may arrest the heart before arrest of respiration. In one experiment breathing continued two minutes after the heart had ceased to act.

THE ACTION OF CATHARTICS.

THE action of cathartics is in general attributed to the increased peristalsis produced through irritation of the intestinal mucous membrane. In the case of saline cathartics, on account of the slight local irritation which they may be supposed to produce, some additional factor in the production of catharsis is necessary, and we find this factor either in the increase of intestinal secretion produced by these agents, or in the transudation of water from the blood into the intestinal canal from the osmotic phenomena concerned in their absorption. According to this view, we would naturally expect that the salts, with the higher osmotic equivalents, are those which are the most active cathartics. By the term osmotic equivalent is meant the number of parts, by weight of water, which pass through a membrane to replace each part of the salt which passes in the opposite direction. Thus, if a saturated solution of magnesium sulphate be separated by a membrane from distilled water, for every part of the Epsom salt which passes through the membrane to the water, 11.7 parts of water will pass through the membrane to the salt. It is quite conceivable that a somewhat similar state of affairs obtains in the alimentary tube. The passage of a salt through the in-

testinal walls to the blood entails a loss of water to the blood which must pass into the alimentary tube, and we would naturally expect that the substances which cause the greatest transudation of fluid would be the most active cathartics. Thus we find that the osmotic equivalents of Epsom salt and Glauber salt are much higher than those of sodium phosphate, sodium chloride, or sodium and potassium tartrate, and the former are much the most active cathartics.

The share attributable to the increase of peristalsis as a factor in the production of catharsis, after the administration of laxatives, has been carefully studied out by Drs. J. Brandl and H. Tappeiner, who publish an elaborate experimental essay, based upon an ingenious method of experimentation, in the *Archiv für Experimentelle Pathologie und Pharmakologie*, Band 26, Heft 3 and 4, 1889.

The method which they employed consisted in making a gastric fistula in a dog near the pyloric orifice, and then inserting into the intestinal tube, through this fistula, a rubber bulb attached to a long graduated rubber tube. Through the intestinal peristalsis the rubber bulb is gradually forced farther and farther down through the intestine, and the intensity of peristalsis may be estimated either by measuring the length of tube drawn into the intestine in any given time, or by attaching the free end of the tube over a pulley to a weight, and then measuring the force exerted by the peristalsis directly by estimating the weight which it is capable of overcoming. As it may be readily imagined that in different individuals, even under the same circumstances, the energy of peristalsis would differ, the authors performed their series of experiments upon a single dog, allowing a period of at least a week to elapse between the different experiments, so as to avoid any danger of the production of chronic intestinal catarrh from too frequent repetition; and they state that in no case was a second experiment commenced until the evacuation of the intestinal contents had been perfectly normally performed for several days before the second experiment. In a number of instances a number of weeks were allowed to elapse between the successive experiments, and the authors' series of experiments were thus extended over nearly two years. In all cases no substance was tested until the movement of the bulb had become tolerably regular, by which time it was usually found that the bulb occupied a position of a little more than three feet below the fistula. The apparatus was so constructed that the injection could be made directly at the point at which the bulb was at that moment located, and on either side of the bulb at will,—that is, immediately below the obstructing bulb, or on the upper side, towards the pylorus. The bulb, when distended with water, possessed a diameter of about three centimetres; the volume of the fluids injected into the intestine amounted, as a rule, to about one hundred and fifty centimetres, which was followed ordinarily by an injection of about fifty centimetres of water, so that two hundred centimetres in all were injected into the intestine. The solutions ordinarily contained 1 decigramme (1⅞ grains) of potassium ferrocyanide, so that on the exit of fluid from the fistula, or in the production of diarrhœa, the addition of ferric chloride would permit of the detection of the presence or absence of the injected fluids.

The first series of experiments was directed towards the determination of the actual length of the intestinal tube. It was found that, after filling the rubber bulb with fifteen cubic centimetres of water, it steadily descended through the intestinal tube for eight or nine hours, and then was arrested. The length of rubber tube which in this time was drawn down through the intestine averaged two hundred centimetres, only in a few cases deviating from this number by ten to forty centimetres, the bulb then lying directly above the sphincter ani. When no cathartics were administered, the bulb was never spontaneously evacuated through the rectum, but was only removed through the injection of a soapy enema. The length of the entire intestinal tube thus measured amounted then to about two hundred and five centimetres.

The first series of experiments as to the influence of injections were made after the administration of from 150 to 350 cubic centimetres of dilute (one per cent.) salt solutions. These were found to exert no marked influence, although concentrated solutions of common salt (fifteen per cent.) were found to slow considerably the progress of the bulb. The experiment was then made with the different cathartics, first injecting them *below* the bulb, the result of this series of experiments proving that the drugs so administered almost invariably were without influence on the rapidity of the movement of the bulb; in but rare instances was the movement increased.

The experiments made with the cathartics *above* the bulb offer some very interesting results. In the following tables each number represents the length of tube in centimetres

drawn in that time into the intestine, the number in brackets representing the total length of tube at the end of the corresponding half-hour which had been drawn into the intestine. The asterisk denotes the time of injection of the cathartic, all subsequent numbers denoting the progress of the bulb after the administration of the drug.

The influence of the injections of sodium sulphate on the movement of the bulb is inexplicable. In certain instances, examination of the table will show that the maximum of the normal progress of the bulb in half an hour is fourfold accelerated, and then practically arrested, or there is a steady, more moderate increase in the rapidity of movement.

In the experiments made with the infusion of senna, it was noticed that the bulb was in nearly every case extruded from the anus, and that the rapidity of movement at the end of the experiment was nearly always more rapid than immediately after the injection, an observation which seems to show that senna acts especially on the large intestines. Further, it is stated that diarrhœa was ordinarily not produced until after the bulb was removed from the intestine. The experiments made to determine the power exerted by the bulb in its descent through the intestine further show that the cathartics increase the energy with which the bulb moved; or, in other words, the actual power of peristalsis was increased, as was indicated by the fact that the descending bulb was able to lift a greater weight after the administration of cathartics than was the case before, this being especially marked when the bulb was located low down in the intestine.

FIRST SERIES.—*Injections of Sodium Sulphate Solutions above the Bulb.*

Experiment 1. 30 : 200 water.	Experiment 2. 30 : 200 water.	Experiment 3. 30 : 200 water.	Experiment 4. 30 : 200 water.	Experiment 5. 30 : 200 water.	Experiment 6. 30 : 300 water.	Experiment 7. 30 : 600 water.
14 (31)	52 (72)	40 (57)	11 (34)	48 (68)	5 (35)	8 (43)
20	9	13	28	7	7	6
9	6	13	8	12	7	11
6	5	6	13	1	11	10
9	5	4	9	0	15	11
3	10	3	11	0	9	11
5	3 (110)	0	8	0	4	3
4	53*	7	4	12	7	5
3	0	7 (110)	0 (120)	3	10	8
6 (103)	0	30*	10*	14	4	5
10*	0	29	12	10	4	6
34	0	26	33	8	7	4 (123)
9	5	2	0	7 (145)	4	7
24	0 (170)	3	22	13*	3 (127)	63*
18 (198)	...	0	7	52	23*	10
0	...	4 (204)	0 (204)	37 (247)	25	17
...	...	...	...	...	25	0 (220)
...	...	...	...	...	20 (220)	...

SECOND SERIES.

Infusion of senna. 40 : 200 water.		Convolvulin. .5 : 200 water with .1 bile.		Castor oil. 50	95	Croton oil. .2	Colocynthin. .05 : 200 water.	Crystalline aloin. 1 : 200 water.
37 (67)	15 (35)	45 (65)	15 (45)	13 (33)	20 (40)	13 (48)	11 (38)	15 (35)
4	15	19	5	17	15	5	10	17
6	23	0	12	23	14	11	13	12
3	7	4	19	14	16	8	10	0
2	5	3	9	0	0	10	11	4
2	0	4	0	7	10	8	8	6
1	5	7 (112)	7	4	0	5	11	0
9	10	3	11 (108)	12	0	5	11	5
3	2	26*	0*	0	8	0	0 (112)	4
8	8	19	8	5	7	0	6*	14
5* (110)	5	9	4	4	5 (115)	8	7	10
10	5	6	28	1 (120)	25*	7 (115)	35	7 (115)
0	2	7	24	10*	15	20*	6	15*
15	7 (122)	8	9	30	14	20	2	10
14	31*	15	19	0	21	13	0	0
8	17 (170)	15	10 (210)	15	0 (180)	0	0	0
18	...	5 (225)	...	5 (180)	...	14	2	10
24 (199)	...	...	...	...	...	0 (182)	0 (170)	5
...	...	...	...	...	...	...	15	...
...	...	...	...	...	...	...	0 (170)	...

THE COMPARATIVE ACTIVITY OF THE DIFFERENT DIGITALIN PREPARATIONS.

THERE seems to be very little prospect of a satisfactory conclusion of the controversy as to the activity of the different digitalis preparations. In fact, we can readily understand how a physician, reading the statements of different authors as to the activity of the different preparations of the active principle obtained from digitalis, might hesitate, in the face of such marked contradiction, to believe that any statement is worthy of reliance. The greatest confusion exists as to the different classes of digitalin. Thus there exist the crystalline digitalin of Nativelle; the amorphous digitalin of Homolle and Quevesne, which are officinal in France, the latter being designated as chloroformic digitalin; digitalin soluble in water; the German digitalin, which is soluble in water, and often described as amorphous digitalin; and, finally, the German digitaloxin, which seems to be identical with crystalline digitalin. The literature as to the action of these different preparations is a very extensive one, and it is very difficult at present to form any conclusion as to the value of these different substances. Our only hope is to continue to prosecute studies as to the action of these different preparations, with the hope that finally they may be sufficiently well classified to enable us to select the most active preparation. At present, as for some time has been the case, the tincture appears to be the only reliable preparation.

In a paper read by M. Bardet before a recent meeting of the Société de Thérapeutique (*Le Progrès Médical*, December 21, 1889), he reports the results of some experiments made with the crystalline digitalin, made according to Arnaud's formulæ, the amorphous digitalin of the Codex, the German digitalin, and digitaloxin and digitalein. His experiments were made on frogs and rabbits, employing the hypodermic method, with watery or alcoholic solutions, administering in each case toxic doses. Bardet has found that with the crystalline digitalin the fatal dose for frogs is about a $\frac{1}{40}$ grain, while for the rabbit it is $\frac{1}{20}$ to $\frac{1}{4}$ grain for every two pounds body-weight. The amorphous digitalin of the French Codex possesses about the same degree of activity as the crystalline digitalin, as is also the case with digitaloxin of German origin. Digitalin soluble in water, made by maceration of the leaves in water, produced death when administered in doses of from ¾ to 1 grain per every two pounds of body-weight in rabbits. Thus, it is fifteen or twenty times less poisonous than the amorphous chloroformic digitalin. As to the attributes of these different preparations, the crystalline and the amorphous digitalin, prepared according to the formulæ of the French Codex, are entirely soluble in chloroform; they possess an identical action, and are perfectly comparable in their effects (*La France Médicale*, December 7, 1889).

The German digitaloxin, on the other hand, is incompletely soluble in chloroform, and its activity is two or three times less than that of the French digitalin; on the other hand, the French digitalein and the German digitalin are both soluble in water and insoluble in chloroform, and are not to be regarded as definite products. Their action is from twenty to twenty-five times more feeble than that of the French digitaleine or the chloroformic digitalin; while it must not, however, be forgotten that the action on the heart may not be exactly the same as that of the digitalin of the Codex.

General testimony appears to favor the use of the crystalline digitalin, which is claimed by numerous observers, especially by Bardet (*Les Nouveaux Remèdes*, December 24, 1889), to be a remedy which is absolutely constant in its action and of perfectly definite composition.

Reports on Therapeutic Progress.

THE SECOND HYDERABAD CHLOROFORM COMMISSION.

The experiments of the committee were designed to show the effect upon the blood-pressure, heart, and respiration of the inhalation of chloroform, ether, and the A. C. E. mixture, administered in various ways and under varying conditions. The objects of the commission were five in number:

I. To test the suitability and safety of chloroform as an anæsthetic. The experiments with ether and the A. C. E. mixture were instituted principally for the sake of comparison with chloroform on certain points, and it is not pretended that they afford a complete exposition of the action of those agents on the system.

II. The effect of pushing the above-named anæsthetics (*a*) to a dangerous degree, and more especially until the respiration ceases; (*b*) until death results.

III. The modifications in the effects of

these anæsthetics which result from (*a*) asphyxia in varying degrees and produced by various means, (*b*) from the use of drugs such as morphine, atropine, physostigmine, and others.

IV. The reality or otherwise of the alleged liability during ordinary chloroform administration to the occurrence of primary or secondary syncope or stoppage of the heart, brought about either by shock or through fatty or weak heart, or by hemorrhage, or by changes in the position of the body. To investigate these points, in the first place a large number of operations which are reported to be especially dangerous in reference to shock were performed in every stage of anæsthesia, and numerous experiments were also made to show the effect of direct irritation of the vagus. Secondly, a number of animals were dosed with phosphorus before they were experimented on. This caused weakening of the heart by fatty degeneration of its fibres, but at the same time other complicated changes in the whole of the organs of the body not met with in the condition known as fatty heart in human beings. On the other hand, there are conditions often met with in the fatty heart, such as changes of the coronary vessels, which were not produced by the phosphorus.

V. The effect of the anæsthetics above mentioned upon different animals, more especially upon monkeys, as the nearest approach to human beings.

The conclusions to which the commission has been brought by the study of these experiments are the following (*Lancet*, January 18, 1890):

1. Chloroform, when given continuously by any means which insures its free dilution with air, causes a *gradual* fall in the mean blood-pressure,* provided the animal's respiration is not impeded in any way, and it continues to breathe quietly without struggling or involuntary holding of the breath,—as almost always happens when the chloroform is sufficiently diluted. As this fall continues, the animal first becomes insensible, then the respiration gradually ceases, and lastly the heart stops beating. If the chloroform is less diluted, the fall is more rapid, but is always gradual, so long as the other conditions are maintained; and however concentrated the chloroform may be, it never causes sudden death from stoppage of the heart. The greater the degree of dilution the less rapid is the fall, until a degree of dilution is reached which no longer appreciably lowers the blood-pressure or produces anæsthesia.

2. If the inhalation is interrupted at any stage, the fall of pressure still continues at a rate which depends altogether on the rapidity of the fall while the chloroform was being inhaled. This after-fall is probably due to absorption of a portion of the residue of chloroform in the air-passages after the stoppage of the inhalation. In this way it often happens, if chloroform is given rather freely, that, though the respiration may be going on when the chloroform is discontinued, it afterwards stops.

3. If the administration of the chloroform is stopped at an early stage, the pressure very soon begins to rise again, and gradually becomes normal; but if the chloroform is pushed further, there comes a time, not easy to define, when the blood-pressure and respiration will no longer be restored spontaneously, although the heart continues to beat after the inhalation is stopped.

4. If the fall has been very gradual, it may occasionally happen that the respiration stops completely, and still the blood-pressure rises again, the respiration recommencing spontaneously in the course of the rise. In the same way, when the inhalation has been discontinued, the respiration may stop during the after-fall of the blood-pressure and begin again spontaneously. As a rule, if the respiration has stopped, or even becomes slow and feeble at the time when the inhalation is discontinued, and artificial respiration is not resorted to, the fall in blood-pressure will continue until death ensues.

5. There are two conditions which frequently disturb the gradual fall of the blood-pressure,—viz., struggling and holding the breath,—and it is only by great care that they can be avoided in animals.

6. Struggling, independently of any change in the respiratory rhythm, appears generally to raise the blood-pressure. In one case of a dog much weakened from phosphorus, the pressure fell every time he struggled.

7. When struggling is accompanied, as it often is, by acceleration of the respiration and pulse, especially if the respiration is deep and gasping, it leads to a more rapid inhalation of chloroform, and consequently to a more rapid fall of blood-pressure and a greater after-fall. In order to keep the chloroform-cap or inhaler in its place during

* Every tracing was photographically reproduced, and a copy of the complete work will be presented to all of the principal medical libraries throughout the world.

the animal's struggles, the administrator is obliged to hold it down more tightly over the nose and mouth, and this materially assists in hastening the rapidity of the inhalation, and consequently of the fall in blood-pressure.

8. The effect of involuntarily holding the breath—which, as anybody can prove by experiment upon himself, must happen when an inhaler saturated with chloroform is first applied to the face—is much more remarkable, the pressure often falling with great suddenness, while the heart's action is markedly slowed. As soon as the animal draws breath again, the pressure rises as suddenly as it fell, but the gasping respiration which succeeds then causes very rapid inhalation of chloroform, with immediate insensibility and a rapid fall of blood-pressure, which quickly becomes dangerous.

9. The combination of struggling with alternate holding the breath and gasping, which results if chloroform is applied closely to the face without sufficient dilution with air, causes violent fluctuations, and then a speedy fall of the blood-pressure, which very soon leads to a dangerous depression with deep insensibility and early stoppage of the respiration. The after-fall under these circumstances is rapid and prolonged. It is this combination of events which causes struggling animals to go under chloroform so quickly.

10. The effect of holding the breath may occasionally cause a temporary fall of blood-pressure after the chloroform inhalation has been stopped, or even when the animal is quite out of chloroform. This fall is recovered from directly the animal breathes again.

11. Slight continuous asphyxia, such as is produced by pressure on the neck by straps, a badly-fitting muzzle, or hinderance of the chest movements by the legs being too tightly bound down, gives rise to exaggerated and irregular oscillations of the blood-pressure, and slowing and irregularity of the heart's action. If it leads to, or is accompanied by deep gasping inspiration, it is apt, like anything else which causes this, to increase the intake of chloroform and bring about a rapid decline of blood-pressure.

12. Complete or almost complete asphyxia, as by forcibly closing the nose and mouth, or closing the tracheal tube after tracheotomy, has an effect similar to, but more marked than, that produced by holding the breath, and the character of the trace corresponds precisely to that produced by irritation of the peripheral end of the cut vagus. The pressure falls extremely rapidly, sometimes almost to zero, and the heart's action becomes excessively slow, or even stops for a few seconds. If the Fick trace of Experiment 148 be compared with the photographic reproduction of Trace A of the Glasgow committee, it will be seen that they are identical, and that the slow action of the heart with great fall of pressure, which the Glasgow committee attributed to some capricious action of chloroform upon the heart, was undoubtedly due to asphyxia.

13. This effect of asphyxia is the result of stimulation of the vagi. The proof of this is (*a*) that the trace corresponds exactly, as stated above, to that produced by direct irritation of the vagus, (*b*) division of both vagi entirely abolishes it, and (*c*) the administration of atropine which paralyzes the vagus also abolishes it.

14. In Trace 158 (Fick 4), which was taken during asphyxia after a full dose of atropine, it will be seen that there is an alternately slow and rapid pulse, according to the phase of the respiratory movement, but no continued slowing of the heart as in vagus irritation. But there was still a distinct fall of pressure after the atropine when the breath was held, and it was thought that the slowing of the pulse above noted in this condition might be due to the disturbance of the heart from tension in the pulmonary vessels in the absence of respiratory movement, rather than to irritation of the vagi. To test this point Experiment 184 was instituted. In this experiment the dog's chest was forcibly inflated with bellows connected by a tube with the trachea, and the effect of this proceeding was to cause a fall of pressure and slowing of the heart exactly the same as involuntary holding of the breath. The dog was then poisoned with atropine, after which inflation of the chest still caused a fall of pressure, but without slowing of the heart. The fall of pressure must be in some degree independent of vagus irritation, which, however, usually accompanies it.

15. It only remains to be considered whether the slow action or temporary stoppage of the heart with great fall of pressure produced by vagus irritation is in itself an element of danger in chloroform administration, and if it is not, wherein the danger actually lies.

16. The experiments in which deliberate irritation of the vagi was carried on during anæsthesia show unmistakably that irritation

of these nerves diminishes rather than enhances the danger of anæsthetics. The effect upon the heart is never continuous, and as the vagus becomes exhausted, or when the irritation is taken off, the blood-pressure rises again, as it does when the same result is produced by asphyxia. The slowing of the heart and circulation which is produced by irritation of the vagus by any cause, such as holding the breath in chloroform administration, retards the absorption and conveyance of chloroform to the nerve-centres, just as holding the breath, whether voluntary or involuntary, prevents chloroform from entering the lungs; and of itself slowing or temporary stoppage of the heart in chloroform administration is not dangerous.

17. To answer the second part of the last question in Paragraph 15 is easy enough, if it is kept in mind that the effect of vagus irritation upon the heart is never continuous; and in chloroform administration, as the pressure rises again after the slowing of the heart and temporary fall of pressure produced by any form of asphyxia, violent respiratory efforts with bounding heart's action lead, as in the case of struggling, to a rapid and dangerous inhalation of chloroform, and consequent rapid and dangerous decline in blood-pressure. It is, in fact, the temporary exhaustion of the vagi after stimulation that is to be feared, and not the actual stimulation as long as it is continued.

18. In accordance with this fact, it will be found that in chloroform administration neither holding the breath, even if involuntary, or vagus inhibition can be kept up beyond a certain time; and if the chloroform is not removed from the face, one or both of two things may happen: (*a*) when the animal breathes again, it takes deep and gasping inspirations, the lungs become filled with chloroform, and an overdose is taken in with extreme rapidity; or (*b*), when the restraining influence of the vagus is taken off the heart, through the irritation ceasing or the nerve becoming exhausted, the heart bounds on again, and the circulation is accelerated in proportion. The blood then becomes quickly saturated with chloroform, and an overdose is at once conveyed to the nerve-centres. The theory which has hitherto been accepted is that the danger in chloroform administration consists in the slowing or stoppage of the heart by vagus inhibition. This is now shown to be absolutely incorrect. There is no doubt whatever that the controlling influence of the vagus on the heart is a safeguard, and that it is the exhaustion of the nerve which is dangerous.

19. It can be readily understood how a condition in which the pulse is rapid and bounding, with high blood-pressure, leads to more rapid absorption of chloroform from the lungs, and a more rapid propulsion of the chloroformed blood to the medulla oblongata, and consequently to a more rapid paralysis of the respiratory and vaso-motor centres and precipitous fall in the blood-pressure. Such a condition is produced in some cases by ether or by division of both vagi, or by a full dose of atropine. Not only is the poisoned blood carried more swiftly to the vital centres in these cases, but added to this there is the fact that, as the heart is already doing its utmost before the chloroform is given, it is unable to stave off by increased work the fall in pressure that occurs when the vaso-motor centre is paralyzed. On the other hand, it seems clear from Experiment 92 that the direct action of chloroform upon the heart's substance is not the cause of the fall of pressure that occurs when it is inhaled.

20. In Experiment 92 repeated injections of 20 minims of chloroform were made into the jugular vein, and its effect was not to paralyze the heart, but to produce anæsthesia and a gradual fall of blood-pressure exactly as if the chloroform had been inhaled. In Experiment 72, after a considerable amount of ether had been injected into the jugular vein, and a bounding condition of pulse had been produced, the effect of injecting chloroform into the jugulars was much greater, and the fall of blood-pressure much more rapid and dangerous, than in the case when chloroform alone was injected. Granting, then, the truth of Ringer's conclusions from experiments on the frog's heart (which have not been repeated and confirmed by the commission) that chloroform has a gradual paralyzing effect upon the heart's tissue, we must conclude that such an effect, in the degree in which alone it could occur in the practical inhalation of chloroform, would rather be a source of safety than of danger.

21. The committee discussed the advisability of cutting the vagi some time previously to experimenting on the blood-pressure with chloroform. The effect of this procedure is to cause continuous rapid action and tendency to exhaustion of the heart, as well as to degeneration of the terminal branches of the nerves in the heart if the animal live sufficiently long. Such experi-

ments might be of some interest theoretically, and also have had a practical bearing upon the condition of the heart in certain cases of chronic alcoholism; but the committee decided not to perform them, as it considered the end to be gained did not justify the pain they would have inflicted.

22. In Experiment 178, the case of a dog that had had morphine, remarkable slowing and even temporary cessation of the heart's action occurred again and again at the same moment as the respiration stopped, but the heart invariably recovered itself, and began again to beat regularly before any steps were taken to restore the animal, and without any respiration occurring. We find in this case that it was possible to restore the animal even after unusually long intervals had been allowed to elapse between the cessation of the natural and the commencement of artificial respiration. The failure of the heart, if such it can be called, instead of being a danger to the animal, proved to be a positive safeguard, by preventing the absorption of the residual chloroform and its distribution through the system.

23. The effect of artificial respiration after the natural respiration has ceased is to cause an alternate rise and fall of small amount in the blood-pressure, the trace thus formed upon the drum being a coarse imitation—altered somewhat by the shaking of the table—of the natural respiratory curve. The difference consists chiefly in the fact that the artificial rise and fall are more abrupt than in natural breathing, and that the rise always coincides with expiration or compression of the chest. After artificial respiration has been continued for a certain time, the blood-pressure begins to rise again, and a little later natural respiration returns.

24. The effect of artificial respiration in restoring an animal after the respiration had stopped was always marked. In a few exceptional cases, such as Experiment 159, a phosphorous dog, and Experiment 142, a horse which had an enormous overdose, although the artificial respiration was commenced as soon as possible after the breathing was noticed to have stopped, it was not successful.

25. Complete stoppage of the respiration always means that an overdose has been administered, and the overdose may have been so great as to produce a very prolonged after-fall of blood-pressure, and may thus render restoration impossible. As it is impossible to say whether, after chloroform has been pushed and then discontinued, the respiration will be restored spontaneously or not, so it is never in any case certain that artificial respiration will restore the natural respiration and blood-pressure, no matter how soon it is commenced after the respiration stops. A great deal depends upon the amount of the after-fall; in some cases, even after the respiration has been restored, the pressure continues to fall and respiration again ceases, and artificial respiration then fails. We thus find respiration restored by artificial respiration, while chloroform is still being absorbed, and this tends to show that artificial respiration does not merely pump the chloroform out of the blood, but exerts considerable influence in exciting the natural respiration.

26. The time which elapses before artificial respiration succeeds in restoring natural respiration varies very greatly. In one case, Experiment 116, it was continued for eleven minutes before the first natural gasps commenced. This period is undoubtedly prolonged in some cases by a condition of physiological apnœa, which renders it unnecessary for the animal to breathe. Consequently, whenever the pressure rose considerably during artificial respiration it was stopped, and the animal then generally breathed after a few seconds.

27. The time which may be allowed to pass with impunity before commencing artificial respiration also seems to vary considerably. This point was not particularly attended to in the manometer experiments, except in Experiments 162 and 178, which were instituted to test the truth of the opinion formed by the sub committee that morphine had some slight action in impairing the efficiency of artificial respiration. In these cases the commencement of artificial respiration was postponed for more than two minutes after respiration ceased, and was successful; but this is certainly far above the average interval that can be allowed with safety. The success of artificial respiration in restoring the blood-pressure is in some cases very remarkable; *vide* especially Experiment 40, in which the heart had apparently ceased beating, and the dog was believed by every one present to be dead, and yet recovered with artificial respiration. The success in this instance is due to the fact that chloroform had only been administered for a few seconds, and that the depression was the result, not of continuous chloroform administration until respiration ceased, but of a long and severe after-fall.

of these nerves diminishes rather than enhances the danger of anæsthetics. The effect upon the heart is never continuous, and as the vagus becomes exhausted, or when the irritation is taken off, the blood-pressure rises again, as it does when the same result is produced by asphyxia. The slowing of the heart and circulation which is produced by irritation of the vagus by any cause, such as holding the breath in chloroform administration, retards the absorption and conveyance of chloroform to the nerve-centres, just as holding the breath, whether voluntary or involuntary, prevents chloroform from entering the lungs; and of itself slowing or temporary stoppage of the heart in chloroform administration is not dangerous.

17. To answer the second part of the last question in Paragraph 15 is easy enough, if it is kept in mind that the effect of vagus irritation upon the heart is never continuous; and in chloroform administration, as the pressure rises again after the slowing of the heart and temporary fall of pressure produced by any form of asphyxia, violent respiratory efforts with bounding heart's action lead, as in the case of struggling, to a rapid and dangerous inhalation of chloroform, and consequent rapid and dangerous decline in blood-pressure. It is, in fact, the temporary exhaustion of the vagi after stimulation that is to be feared, and not the actual stimulation as long as it is continued.

18. In accordance with this fact, it will be found that in chloroform administration neither holding the breath, even if involuntary, or vagus inhibition can be kept up beyond a certain time; and if the chloroform is not removed from the face, one or both of two things may happen: (*a*) when the animal breathes again, it takes deep and gasping inspirations, the lungs become filled with chloroform, and an overdose is taken in with extreme rapidity; or (*b*), when the restraining influence of the vagus is taken off the heart, through the irritation ceasing or the nerve becoming exhausted, the heart bounds on again, and the circulation is accelerated in proportion. The blood then becomes quickly saturated with chloroform, and an overdose is at once conveyed to the nerve-centres. The theory which has hitherto been accepted is that the danger in chloroform administration consists in the slowing or stoppage of the heart by vagus inhibition. This is now shown to be absolutely incorrect. There is no doubt whatever that the controlling influence of the vagus on the heart is a safeguard, and that it is the exhaustion of the nerve which is dangerous.

19. It can be readily understood how a condition in which the pulse is rapid and bounding, with high blood-pressure, leads to more rapid absorption of chloroform from the lungs, and a more rapid propulsion of the chloroformed blood to the medulla oblongata, and consequently to a more rapid paralysis of the respiratory and vaso-motor centres and precipitous fall in the blood-pressure. Such a condition is produced in some cases by ether or by division of both vagi, or by a full dose of atropine. Not only is the poisoned blood carried more swiftly to the vital centres in these cases, but added to this there is the fact that, as the heart is already doing its utmost before the chloroform is given, it is unable to stave off by increased work the fall in pressure that occurs when the vaso-motor centre is paralyzed. On the other hand, it seems clear from Experiment 92 that the direct action of chloroform upon the heart's substance is not the cause of the fall of pressure that occurs when it is inhaled.

20. In Experiment 92 repeated injections of 20 minims of chloroform were made into the jugular vein, and its effect was not to paralyze the heart, but to produce anæsthesia and a gradual fall of blood-pressure exactly as if the chloroform had been inhaled. In Experiment 72, after a considerable amount of ether had been injected into the jugular vein, and a bounding condition of pulse had been produced, the effect of injecting chloroform into the jugulars was much greater, and the fall of blood-pressure much more rapid and dangerous, than in the case when chloroform alone was injected. Granting, then, the truth of Ringer's conclusions from experiments on the frog's heart (which have not been repeated and confirmed by the commission) that chloroform has a gradual paralyzing effect upon the heart's tissue, we must conclude that such an effect, in the degree in which alone it could occur in the practical inhalation of chloroform, would rather be a source of safety than of danger.

21. The committee discussed the advisability of cutting the vagi some time previously to experimenting on the blood-pressure with chloroform. The effect of this procedure is to cause continuous rapid action and tendency to exhaustion of the heart, as well as to degeneration of the terminal branches of the nerves in the heart if the animal live sufficiently long. Such experi-

ments might be of some interest theoretically, and also have had a practical bearing upon the condition of the heart in certain cases of chronic alcoholism; but the committee decided not to perform them, as it considered the end to be gained did not justify the pain they would have inflicted.

22. In Experiment 178, the case of a dog that had had morphine, remarkable slowing and even temporary cessation of the heart's action occurred again and again at the same moment as the respiration stopped, but the heart invariably recovered itself, and began again to beat regularly before any steps were taken to restore the animal, and without any respiration occurring. We find in this case that it was possible to restore the animal even after unusually long intervals had been allowed to elapse between the cessation of the natural and the commencement of artificial respiration. The failure of the heart, if such it can be called, instead of being a danger to the animal, proved to be a positive safeguard, by preventing the absorption of the residual chloroform and its distribution through the system.

23. The effect of artificial respiration after the natural respiration has ceased is to cause an alternate rise and fall of small amount in the blood-pressure, the trace thus formed upon the drum being a coarse imitation—altered somewhat by the shaking of the table—of the natural respiratory curve. The difference consists chiefly in the fact that the artificial rise and fall are more abrupt than in natural breathing, and that the rise always coincides with expiration or compression of the chest. After artificial respiration has been continued for a certain time, the blood-pressure begins to rise again, and a little later natural respiration returns.

24. The effect of artificial respiration in restoring an animal after the respiration had stopped was always marked. In a few exceptional cases, such as Experiment 159, a phosphorous dog, and Experiment 142, a horse which had an enormous overdose, although the artificial respiration was commenced as soon as possible after the breathing was noticed to have stopped, it was not successful.

25. Complete stoppage of the respiration always means that an overdose has been administered, and the overdose may have been so great as to produce a very prolonged after-fall of blood-pressure, and may thus render restoration impossible. As it is impossible to say whether, after chloroform has been pushed and then discontinued, the respiration will be restored spontaneously or not, so it is never in any case certain that artificial respiration will restore the natural respiration and blood-pressure, no matter how soon it is commenced after the respiration stops. A great deal depends upon the amount of the after-fall; in some cases, even after the respiration has been restored, the pressure continues to fall and respiration again ceases, and artificial respiration then fails. We thus find respiration restored by artificial respiration, while chloroform is still being absorbed, and this tends to show that artificial respiration does not merely pump the chloroform out of the blood, but exerts considerable influence in exciting the natural respiration.

26. The time which elapses before artificial respiration succeeds in restoring natural respiration varies very greatly. In one case, Experiment 116, it was continued for eleven minutes before the first natural gasps commenced. This period is undoubtedly prolonged in some cases by a condition of physiological apnœa, which renders it unnecessary for the animal to breathe. Consequently, whenever the pressure rose considerably during artificial respiration it was stopped, and the animal then generally breathed after a few seconds.

27. The time which may be allowed to pass with impunity before commencing artificial respiration also seems to vary considerably. This point was not particularly attended to in the manometer experiments, except in Experiments 162 and 178, which were instituted to test the truth of the opinion formed by the sub committee that morphine had some slight action in impairing the efficiency of artificial respiration. In these cases the commencement of artificial respiration was postponed for more than two minutes after respiration ceased, and was successful; but this is certainly far above the average interval that can be allowed with safety. The success of artificial respiration in restoring the blood-pressure is in some cases very remarkable; *vide* especially Experiment 40, in which the heart had apparently ceased beating, and the dog was believed by every one present to be dead, and yet recovered with artificial respiration. The success in this instance is due to the fact that chloroform had only been administered for a few seconds, and that the depression was the result, not of continuous chloroform administration until respiration ceased, but of a long and severe after-fall.

28. It corresponds to those cases, which are so often reported, in which dangerous failure of the heart is said to have occurred some minutes after the administration of chloroform had been discontinued, and which are sometimes restored, and sometimes not, by artificial respiration. There is nothing at all sudden about the failure of the heart in these cases, but the attention of the chloroformist, which has been wandering, is suddenly called to the fact that the patient is apparently dead. When the animal was really dead, it was found in some cases that artificial respiration still maintained a small amount of mean pressure in the manometer. In others the pressure seemed to fall to the zero line between each compression of the chest.

29. The dangers of too vigorous artificial respiration were illustrated in some of the accidental deaths. In one case the liver was badly ruptured, and in another the pleural cavity was full of blood. In three cases—Experiments 80, 92, and 103—rhythmical movements of the diaphragm were noticed after the heart had ceased beating and after the chest had been opened. It is remarkable that in two of these cases the splanchnic nerve had been divided. The third was a case in which chloroform had been injected into the jugular vein, and in this case there was a synchronous movement of the jaw as well. In all, death and stoppage of the heart had occurred gradually, and in Experiment 103 the heart was still irritable. These movements cannot be called respiration; though the last gasp of a dying animal, that ineffective jerk of the diaphragm, which is such a fatal symptom, is very likely in many cases a movement of the same character. Similar movements, which were continued much longer, occurred in Experiment 104, after the thorax was opened, while the heart was still beating. Still more remarkable convulsions of the muscles of the jaws, ears, and forefeet occurred in Experiment 167, in the case of a dog that had been poisoned with nicotine. These movements continued at regular intervals for more than ten minutes after death, and were sufficiently forcible to jerk the handles of a pressure forceps fixed on the end of the tongue off the table at each spasm. In a rabbit, in Experiment 153, the auricles of the heart continued to beat rhythmically for three hours after it was supposed to be dead from chloroform and its thorax had been laid open. Irritability of the heart after death was noticed in many cases, but seemed to be most marked in cases where ether had been used.

30. Chloroform injected into the heart through the jugular vein did not cause clotting of the blood, as was the case when ether was injected.

31. In the course of the experiments of the committee various drugs were administered in order to ascertain if they had any effect in modifying the action of chloroform. The result showed that none of them had any effect in preventing the typical descent of the blood-pressure that occurs when chloroform is inhaled. Atropine, when given in a dose sufficient to paralyze the vagi, of course prevents the action of those nerves in asphyxia, and by increasing the action of the heart it appears to cause a more rapid descent in the blood-pressure when chloroform is inhaled, as has been already explained. Morphine appeared in Experiment 162 to render the rise in blood-pressure that occurred when the chloroform was discontinued slower and less complete, and to bring about a more or less permanent condition of anæsthesia. It may be noted that the animal used in this experiment was a monkey; and in other experiments with monkeys, when no morphine had been given, it was remarked that the animal, after a few inhalations of chloroform, would often lie quite quiet in a state of semi-insensibility for a long time without further inhalations; still this condition was much more marked in Experiment 162 than in any of the others. No action of this kind was noticed in the dog in Experiment 178, but other experiments (90 and 94) showed that pariah dogs are very indifferent to the action of morphine, and it is probable that the dose of morphine in this case was insufficient to bring about the condition noted in the monkey. The peculiar behavior of the heart in Experiment 178 was not the result of the previous administration of morphine, for a similar phenomenon had occurred in other cases (49 and 60) in which no morphine had been given. Experiment 162 and 178 prove conclusively that morphine has no effect in shortening the period that may be allowed to elapse between the cessation of natural respiration and the commencement of artificial respiration.

32. The other drugs used had no effect upon the action of chloroform, except when their own special action became the leading feature in the case,—as, for instance, during the vomiting from apomorphine (Experiment 104, Fick 9) or the convulsions produced by nicotine (Experiment 167).

33. In order to test the alleged danger from shock during chloroform administration, the committee performed a very large number of those operations which are reputed to be particularly dangerous in this connection,—such as extractions of teeth, evulsion of nails, section of the muscles of the eye, snipping of the skin of the anus, etc. In many cases the operation was performed when the animal was merely stupefied by the chloroform and not fully insensible. In such cases a slight variation in the blood-pressure would sometimes occur, such as one would expect from the irritation of a sensory nerve or from the struggling that ensued, but in no case in any stage of anæsthesia was there anything even suggestive of syncope or failure of the heart's action. In thrusting a needle into the heart, there was often a momentary but well-marked fall of blood-pressure; but even this was absent in all other injuries. If chloroform really had any power to increase the tendency to shock in operations, it is impossible to believe that it would not have been manifested, to some degree at least, in one or other of these numerous experiments. The commission was, however, not content with this negative result, and determined to ascertain the effect of direct irritation of the vagi during continued chloroform administration. The result of such experiments (65, 117, and others) proved that inhibition of the heart's action prevented, rather than assisted, the fatal effects of prolonged chloroform inhalation. An animal that was put into a condition of extreme danger (from which it could only be restored by means of artificial respiration) by inhalation of chloroform for one minute, recovered spontaneously and readily after five minutes of chloroform inhalation, together with inhibition of the heart by electrical irritation of the vagus carried on simultaneously. In one of these experiments (117) chloroform was pushed for seven minutes; and during continued irritation of the vagus the animals repeatedly came round without artificial respiration. The danger really begins when the irritation is discontinued or fails to inhibit the heart, and thus enables the chloroform in the lungs to be rapidly absorbed and thrown into the system. The danger is certainly increased by deliberately pumping the chloroform into the lungs by means of artificial respiration, for animals in which this was done, although they showed a tendency to recover when the chloroform and irritation of the vagus were discontinued, afterwards died rapidly.

34. On another occasion, during Experiment 117, the animal was very nearly killed by a comparatively short inhalation of chloroform, owing to the electrodes becoming accidentally short circuited and failing to keep up the irritation of the vagus. Something similar occurred in Experiment 177, the effect of the irritation of the vagus passing off while the chloroform was still being pushed, and thus putting the animal into a condition of extreme and unexpected jeopardy. Nothing could be more striking than these near approaches to accidental death from failure to irritate the vagus efficiently.

35. Other experiments were made to test the truth of the statement that chloroform increases the action of electrical stimuli applied to the vagus, and showed conclusively that it has no such effect. In one instance only the inhibition seemed to be intensified as the chloroform was commenced, and diminished when it was discontinued; but apart from the fact that the supposed effect ceased much too suddenly, a repetition of the experiment on the same and other animals showed that there was in reality no such effect. The increased inhibition in this instance was due to the chloroformist compelling the attendant who was holding the electrodes to change his position, and thus making him unconsciously apply them more efficiently. When the chloroformist withdrew they were restored to their former position. This affords an instance of the care that has to be taken in making experiments if one is not to be deceived.

36. To test the effect of shock due to vasomotor change rather than affection of the heart, Goltz's experiment on the frog was repeated on three dogs. In one there was slight lowering of pressure, which was not extensive, and in the others no effect was produced at all. Other operations which seemed likely to produce shock, such as violent blows upon the testicle, were singularly devoid of effect. Failing to lower the blood-pressure by any of these methods, recourse was had to section of the splanchnics; but the low condition of blood-pressure this produced appeared, like stoppage of the heart from vagus irritation, to be a source of safety rather than of danger during chloroform administration. In this connection Experiment 111 may be studied. There was not much external hemorrhage, but the splanchnics were divided,—a proceeding which, as is often said, bleeds the animal into his own vessels. The pressure was after this extremely low, but chloroform was repeatedly

given and various other actions taken, and then chloroform had to be pushed on a saturated sponge enclosed in a cap for eleven minutes before respiration ceased.

37. The conclusion, then, is this: Chloroform has no power of increasing the tendency to either shock or syncope during operations. If shock or syncope from any cause does occur, it prevents, rather than aggravates, the dangers of chloroform inhalation.

38. The experiments on dogs that had been dosed with phosphorus for a few days previously show that the fatty and consequently feeble condition of the heart and other organs so produced has no effect in modifying the action of chloroform. The ease with which vagus irritation and the Glasgow trace could be produced in these animals, by even slight degrees of asphyxia, was very remarkable; but this was equally the case in dogs that had been given phosphorus only a few hours before the experiment, and whose organs were not yet fatty. Many of these cases were in the last stage of phosphorus-poisoning, and several of their companions died without any experiment having been performed on them before or on the same day as they died (*vide* the low state of blood-pressure in Experiment 163). Numerous attempts were made in these animals to produce shock by operations in the recumbent and vertical positions, but without any more result than in those that were healthy.

39. The truth about the fatty heart appears to be that chloroform *per se* in no way endangers such a heart, but on the contrary, by lowering the blood-pressure, lessens the work that the heart has to perform, which is a positive advantage. But the mere inhalation of chloroform is only a part of the process of the administration in practice. A patient with an extremely fatty heart may die from the mere exertion of getting upon the operating-table, just as he may die in mounting the steps in front of his own hall-door, or from fright at the mere idea of having chloroform or of undergoing an operation, or during his involuntary struggles. Such patients must inevitably die occasionally during chloroform administration, and would do so even were attar of roses or any other harmless vapor substituted for chloroform.

40. The effect of hemorrhage was tested by opening the femoral artery and allowing a considerable quantity of blood (eight to twelve ounces) to escape. An immediate lowering of the blood-pressure results, and this is very slowly recovered from. Such an accident, however dangerous it may be in itself, in no way affects the action of chloroform, except in so far that a patient who has been nearly bled to death would require less chloroform in his system to put him into a state of anæsthesia. The low condition of his blood-pressure produced by the hemorrhage would tend to prevent the too rapid intake of chloroform, exactly as in the case of cutting the splanchnics. (*Vide supra* sub-paragraph 36.)

41. When the hind feet are lowered on to the floor, so as to place the animal in the vertical position, a considerable fall of blood-pressure in the carotid artery occurs; but when the animal is replaced on the table in the recumbent position the pressure is fully restored. Various operations were performed on animals in the vertical position, but in no case was anything resembling dangerous shock produced. Inversion of the body, so that the animal stands on its head, has exactly the opposite effect, the pressure rising in the carotid artery, and again falling to its former state when the animal is replaced in the horizontal position. Inversion of the body failed to restore an animal that was in the last stage of chloroform-poisoning, though it raised the pressure in the usual way as long as it was continued. The change in the pressure of the blood of the carotid, which occurs when the position of the body is changed, appears therefore to be due simply to the effect of gravity.

42. As regards the effect of chloroform upon different animals, it may be said to be the same as far as its anæsthetic action is concerned. There are certain peculiarities in its effect on the respiration and circulation connected with its local irritant action on the nostrils and fauces which are interesting to notice. Thus, when concentrated chloroform vapor is applied to the nostrils of rabbits, they hold their breath, and the heart's action is slowed at once. This is always said to be due to reflex inhibition of the heart from irritation of the nasal branches of the trigeminus reflected through the vagus, and is by no means peculiar to chloroform, but is produced equally by any irritant vapor, such as ammonia or acetic acid.

43. In some dogs, and especially in those to which phosphorus had been given, stoppage of the respiration and slowing of the heart occurred immediately after the application of the chloroform to the face, or on forcibly pulling out the tongue, and this sug-

gests that the mechanism of cardiac arrest in them is precisely the same as it is in the rabbit. On the other hand, in rabbits, as in all other animals, it is possible to give chloroform so gently that no spasm of the chest occurs, no reflex effect is produced, and then the pressure falls in the same regular curve and with the same succession of phenomena (anæsthesia, cessation of the respiration, and lastly cessation of the heart-beat) that was above described as typical of chloroform inhalation.

44. Goats have a great tendency to hold their breath while inhaling chloroform, and monkeys resemble dogs rather than rabbits, as when ammonia was held before a monkey's nose (Experiment 98) it did not cause immediate stoppage of the respiration and heart as it does in rabbits.

45. The experiments with ether show that it is impossible to produce efficient anæsthesia with this agent unless some form of inhaler is used which thoroughly excludes the air. If an ordinary cap containing a sponge saturated with ether is applied very closely to the face, the animal generally holds its breath and struggles, and we at once get the fall of blood-pressure and slowing of the heart that invariably occur under these circumstances. If the ether is continued in this way after the animal has recommenced breathing, a condition of semi-anæsthesia results, in which the cornea is sometimes sensitive and sometimes insensitive, and the pressure rises and falls alternately to a slight amount and forms a wavy trace, which may be continued right round the drum without any particular change. As soon as air is rigidly excluded, the pressure commences to fall gradually, exactly in the same way as with chloroform, and with the same succession of phenomena,—viz., first anæsthesia, then cessation of the respiration, then of the heart movements, and finally death. How far this is due to ether and how far to the results of asphyxia it is impossible to say, but an exactly similar succession of events can be brought about by making the animal inhale carbonic acid gas alone.

46. If surgeons choose to be content with a condition of semi-anæsthesia, it can no doubt be produced with perfect safety, though with discomfort to the patient, by ether held rather closely over the mouth. Such a condition of imperfect anæsthesia would never be accepted by any surgeon accustomed to operate under chloroform. If more perfect anæsthesia is required, it can be procured by excluding the air more rigidly, but then there is exactly the same danger as in giving chloroform. How very suddenly and rapidly the pressure may fall and death ensue is well shown by Experiment 33. Ether injected into the jugular vein produces a fall of blood-pressure and anæsthesia in the same way as chloroform does, but in all cases in which it was so injected large clots were found in the heart immediately after death. It is interesting to note that Claude Bernard seems to have formed a very similar opinion with regard to ether, as the following quotations from his work, entitled "Leçons sur les Anésthésiques et sur l'Asphyxie," published in 1875, show. The first quotation (p. 50) is as follows: "Aussi, un certain nombre de chirurgiens proposèrent-ils d'abandonner le chloroforme pour revenir à l'éther, dont l'usage paraissait moins à craindre. Aujourd'hui encore les chirurgiens de Lyons emploient préférablement l'éther. On croyait le chloroforme plus dangereux que l'éther parce qu'il était plus actif; mais, en réalité, la fréquence relative des accidents par le chloroforme tenait peut-être tout simplement à ce que c'était cet agent anesthésique qu'on employait dans l'immense majorité des cas. Plusieurs discussions ont été provoquées par les partisans de l'éther, surtout par les représentants de l'école de Lyons, et il a été constaté que l'éther, lui aussi, avait produit un certain nombre d'accidents mortels. Les deux agents anesthésiques usités peuvent donc, l'un comme l'autre, entraîner quelques risques de mort, et la chirurgie humaine a conservé presque partout le chloroforme, dont l'action est plus rapide et plus complète." The second quotation, to be found on p. 101 of the same work, runs: "Quant à l'éther et au chloroforme, leur action est à peu près la même au point de vue physiologique, sauf une différence d'intensité en faveur du chloroforme, ce qui nous fera généralement employer ce dernier corps de préférence à l'éther."

47. The A. C. E. mixture given gently with plenty of air and the other conditions mentioned before under chloroform produces the typical chloroform trace. Given freely to a struggling animal, it can produce a very rapid and dangerous fall of blood-pressure. In Experiment 52, Fick 4 shows very perfectly the effect on the heart of holding the breath.

ACCIDENTAL DEATHS.

31. The notes of the cases of accidental deaths that occurred during our experiments

have been left among the other notes in the position in which each occurrence took place, and they can be readily found by a reference to the index. The fatal result was brought about either by neglecting to watch the condition of the respiration during or after the administration of chloroform, especially while the carotid artery was being exposed, or from a reckless administration of chloroform in the endeavor to check or prevent struggles. In all the cases of accidental death the usual chloroformist was absent, and no one was attending to the chloroform. The notes would have been more complete if some one could have watched the condition of the animal and noted the gradual but unheeded cessation of respiration without calling attention to it. As it is, one has to be content with the remark that the breathing was noticed to have stopped at some particular time, but there is nothing to throw any light upon the condition during the important period that immediately preceded this discovery. A similar hiatus appears in the account of accidental deaths in the human subject, and is unavoidable. These cases are probably identical with the instances referred to by Snow, "in which animals died in a sudden and what was thought unaccountable manner while chloroform was given to prevent the pain and struggles which would be occasioned by physiological experiments. The death was not really sudden, but only rapid, and the result of reckless administration of concentrated vapor in the first instance, and careless neglect of the condition of the respiration in the second. There is no evidence whatever that a single one of them was due to paralysis or sudden stoppage of the heart, as Snow assumes to have been the case.

32. It must be remembered, in studying the tracings, that, except when it is expressly stated to the contrary, chloroform was throughout administered very freely. The degree and rapidity of the fall of blood-pressure are in almost all cases much greater than should be the case in administering chloroform to human beings. To avoid complicating the notes, the inhaler was kept on much more persistently, with none of those little interruptions while the cornea is being examined, etc., which always occur in practice. The whole series, with few exceptions, may be characterized as examples of reckless administration of chloroform, and accidental deaths would have been much more numerous had it not been that, when once the animal was connected with the manometer, it was kept under the most careful observation. Experiment 79 affords a most interesting exception. The chloroformist, though present in body, was absent in mind, and failed to observe and report the cessation of the respiration. The chloroform was, in consequence, pushed much further than it should have been, and the animal died sooner than was intended.

33. These cases are of themselves quite sufficient to show that animals are just as liable to death from the careless administration of chloroform as human beings; and the accidental deaths which occurred during the experiments of the commission afford the best possible proof that the effects of chloroform are identical in the lower animals and in the human subject. The statement so frequently made, that dogs are more resistant to chloroform than human beings, is entirely incorrect.

PRACTICAL CONCLUSIONS.

34. The following are the practical conclusions which the commission think may fairly be deduced from the experiments recorded in this report:

I. The recumbent position on the back and absolute freedom of respiration are essential.

II. If during an operation the recumbent position on the back cannot, from any cause, be maintained during chloroform administration, the utmost attention to the respiration is necessary to prevent asphyxia or an overdose. If there is any doubt whatever about the state of respiration the patient should be at once restored to the recumbent position on the back.

III. To insure absolute freedom of respiration, tight clothing of every kind, either on the neck, chest, or abdomen, is to be strictly avoided; and no assistants or bystanders should be allowed to exert pressure on any part of the patient's thorax or abdomen, even though the patient be struggling violently. If struggling does occur, it is always possible to hold the patient down by pressure on the shoulders, pelvis, or legs without doing anything which can by any possibility interfere with the free movements of respiration.

IV. An apparatus is not essential, and ought not to be used, as, being made to fit the face, it must tend to produce a certain amount of asphyxia. Moreover, it is apt to take up part of the attention which is required elsewhere. In short, no matter how it is made, it introduces an element of danger into the administration. A convenient

form of inhaler is an open cone or cap with a little absorbent cotton inside at the apex.

V. At the commencement of inhalation care should be taken, by not holding the cap too close over the mouth and nose, to avoid exciting, struggling, or holding the breath. If struggling or holding the breath do occur, great care is necessary to avoid an overdose during the deep inspirations which follow. When quiet breathing is insured as the patient begins to go over, there is no reason why the inhaler should not be applied close to the face; and all that is then necessary is to watch the cornea and to see that the respiration is not interfered with.

VI. In children, crying insures free admission of chloroform into the lungs; but as struggling and holding the breath can hardly be avoided, and one or two whiffs of chloroform may be sufficient to produce complete insensibility, they should always be allowed to inhale a little fresh air during the first deep inspirations which follow. In any struggling persons, but especially in children, it is essential to remove the inhaler after the first or second deep inspiration, as enough chloroform may have been inhaled to produce deep anæsthesia, and this may only appear, or may deepen, after the chloroform is stopped (*vide supra* sub-paragraphs 2 and 9 of conclusions in paragraph 30). Struggling is best avoided in adults by making them blow out hard after each inspiration during the inhalation.

VII. The patient is, as a rule, anæsthetized and ready for the operation to be commenced when unconscious winking is no longer produced by touching the surface of the eye with the tip of the finger. The anæsthetic should never under any circumstances be pushed till the respiration stops; but when once the cornea is insensitive, the patient should be kept gently under by occasional inhalations, and not allowed to come out and renew the stage of struggling and resistance.

VIII. As a rule, no operation should be commenced until the patient is fully under the influence of the anæsthetic, so as to avoid all chance of death from surgical shock or fright.

IX. The administrator should be guided as to the effect entirely by the respiration. His only object, while producing anæsthesia, is to see that the respiration is not interfered with.

X. If possible, the patient's chest and abdomen should be exposed during chloroform inhalation, so that the respiratory movements can be seen by the administrator. If anything interferes with the respiration in any way, however slightly, even if this occurs at the very commencement of the administration, if breath is held, or if there is stertor, the inhalation should be stopped until the breathing is natural again. This may sometimes create delay and inconvenience with inexperienced administrators, but experience will make any administrator so familiar with the respiratory functions under chloroform that he will in a short time know almost by intuition whether anything is going wrong, and be able to put it right without delay before any danger arises.

XI. If the breathing becomes embarrassed, the lower jaw should be pulled, or pushed from behind the angles, forward, so that the lower teeth protrude in front of the upper. This raises the epiglottis and frees the larynx. At the same time it is well to assist the respiration artificially until the embarrassment passes off.

XII. If by any accident the respiration stops, artificial respiration should be commenced at once, while an assistant lowers the head and draws forward the tongue with catch-forceps, by Howard's method, assisted by compression and relaxation of the thoracic walls. Artificial respiration should be continued until there is no doubt whatever that natural respiration is completely re-established.

XIII. A small dose of morphia may be injected subcutaneously before chloroform inhalation, as it helps to keep the patient in a state of anæsthesia in prolonged operations. There is nothing to show that atropine does any good in connection with the administration of chloroform, and it may do a very great deal of harm.

XIV. Alcohol may be given with advantage before operations under chloroform, provided it does not cause excitement, and merely has the effect of giving a patient confidence and steadying the circulation.

35. The commission has no doubt whatever that, if the above rules be followed, chloroform may be given in any case requiring an operation with perfect ease and absolute safety so as to do good without the risk of evil.

EDWARD LAWRIE (*President*),
T. LAUDER BRUNTON,
G. BOMFORD,
RUSTOMJI D. HAKIM,
} *Members.*
EDWARD LAWRIE, *Surgeon-Major.*

HYDERABAD, December 18, 1889.

(True copy.)

THE FATAL AFTER-ACTION OF CHLOROFORM.

A new phase of the chloroform question is touched upon in a paper by OSTERTAG, published in the *Deutsche Medizinal Zeitung* for January 16, 1890. In the literature of the fatal cases of the administration of chloroform as an anæsthetic a few are on record where death was only produced a number of hours after the production of the narcosis. Thus Langenbeck published in 1850 a case of death after extirpation of the shoulder, which occurred seventeen hours after the operation. Berend also published cases in which death did not occur until sixty hours after the production of narcosis. Ungar and Strassmann called attention to the fact that chloroform inhalation in certain instances had produced fatty degeneration of internal organs, especially of the heart and liver, but without producing any detectable alteration in the blood. These results seem to have attracted but little notice, though it is evident that they should draw attention to a possible phase of chloroform death which is worthy of a careful study.

The author's experiments were made on rabbits, guinea pigs, rats, cats, dogs, and pigeons by the administration of chloroform by inhalation, two animals of each species being kept for comparison with those to whom the chloroform had been administered. It was found that in apparently perfectly normal rabbits the inhalation of chloroform was followed by marked fatty infiltration of the liver and fatty degeneration of the muscular fibrili of the heart. In guinea-pigs there was likewise a fatty degeneration of the myocardium of the muscular part of the diaphragm, as well as of the kidneys and liver. In rats, in addition to the accumulation of oil globules in the liver-cells, no especial feature is noted, while in perfectly normal guinea-pigs, in addition to the liver and kidneys, a pathological fatty formation was also found in the skeletal muscles. In cats the fatty deposits were especially confined to the epithelium of the liver and kidneys, while the other organs, especially the heart, were free. In dogs there was a slight fatty infiltration of the liver, and a great accumulation of oil globules in the urinary canals. The results thus show that the effects of chloroform differ very considerably in different groups of animals. While Ungar and Strassmann found that two to three hours narcosis with chloroform was sufficient to cause death in the rabbit, and Dr. Thien notes that the rabbit which for three successive days was chloroformed for eight hours, died eight hours after the last inhalation. In the experience of Dr. Ostertag thirteen hours consecutive chloroforming was insufficient to produce death in the two rabbits on which he experimented. Of the three guinea-pigs which were chloroformed for six and a half hours and thirteen and a quarter hours, respectively, one died twelve hours and the other twenty-four hours after the first narcosis. The third was killed six days after a twelve hours' inhalation. In these animals, in addition to the reaction of the biliary coloring-matters in the urine, there was found a fatty degeneration of the heart, of the kidneys, and of the stomach, and marked fatty infiltration of the liver. In the case of rabbits, of ten occasions in which narcosis was produced, in only one did death follow in that instance after a chloroforming of ten hours. The tissue-change in these animals was very slight, probably, as the author suggests, because rabbits are extremely susceptible to chloroform, and therefore but a very slight amount in spite of the long duration of the anæsthesia could be administered to them. Instead there was found in these cases fatty methæmoglobin of the liver, heart, and kidneys, while the coloring-matter was in one case found in the liver and in another case the renal epithelium was stained yellow. Of the four pigeons, one died nineteen and a half hours after an anæsthesia of two hours' duration; there was then found marked fatty infiltration of the liver and slight fatty degeneration of the kidneys. Fatty degeneration of the heart was especially marked. In seven cases of chloroform inhalation in cats, death occurred four times, six, eight, and in two instances, twelve hours after the last narcosis, the fatal result being produced by the inhalation of from only two and a half hours to four hours. In all cases there was found fatty degeneration of the liver and of the heart, and of the skeletal muscles, while in one case fatty emboli were found in the lungs. In two biliary coloring-matter was found in the urine. Of eight dogs, five died as the result of the after-effects of chloroform after eight hours after an inhalation of four and a half hours, another six hours after an inhalation of four and three-quarter hours, another six hours after an inhalation of eight and three-quarter hours, another six hours after an inhalation of ten hours, and another twenty-seven hours after an inhalation of fifteen and three-quarter hours. In these instances there was found fatty

degeneration of the liver, fatty degeneration of the myocardium and diaphragm, and in the highest grades of poisoning fatty degeneration of the skeletal muscles, of the kidneys, and of the stomach. Biliary coloring-matters in the urine, accompanied by jaundice, occurred in all cases, while in one case albinuria, hæmoglobinuria, and hæmoglobinæmia were present. The author explains the results, when occurring in the renal and gastric epithelium, as attributable to true fatty degeneration; when occurring in the liver, as due only to fatty infiltration. The author likewise calls attention to the alterations produced in the blood, as the result of the action of chloroform, and claims that a great number of the deaths are due to disturbance in the respiratory functions of the red blood-corpuscles, although a number of factors are likewise concerned in the production of this result. The author finds that fatty metamorphosis of the cardiac muscle is one of the causes of death. He claims that it is quite conceivable that the preliminary stages of fatty degeneration, even although not having passed to a complete degeneration, may be concerned in the reduction of the functional activity of the heart. Fatty degeneration of the skeletal muscles, which was especially noted in the diaphragm, may likewise prove an important factor in the disturbance of respiration. While of course the depressing action on the respiratory centre is likewise of prime importance. Further than this, the interference of the respiration leads to the accumulation of carbon dioxide in the blood, and this may act as a depressant on the heart-muscle. Of course, it will not do to apply these results, without further study, directly on man, for it is quite conceivable that there may be as marked differences between the action of chloroform on man and the lower animals, as were noted in the different groups of animals experimented on by the author.

The author formulates his conclusions as follows: 1. After prolonged inhalation of chloroform, fatty degeneration of different organs, especially of the heart, liver, skeletal muscles, kidneys, and stomach occurs in animals of widely-different species. 2. The fatty degeneration is the result not only of the action on the blood, but the structure of the red blood-corpuscles; also a direct local action on the tissue-cells themselves. 3. Certain individuals show such great susceptibility to the action of chloroform by inhalation that they rapidly succumb to its influence. 4. The fatal after-effect of chloroform is attributable to paralysis of the heart, and it is evident by an anatomical degeneration of the myocardium, although in certain cases this may only with difficulty be detected, and to a gradual accumulation of carbon dioxide in the blood.

THE RELATION BETWEEN PERIPHERAL IRRITATION AND NERVOUS PHENOMENA, WITH SPECIAL REFERENCE TO EYE-STRAIN.

At the meeting of the New York Academy of Medicine, in the Section in Neurology, held December 13, 1889, DR. M. ALLEN STARR read a paper with the above title (*New York Medical Journal*, January 18, 1890). He said that the question of the exact relation between peripheral irritation and serious nervous phenomena was not a new one, but had been brought into prominence of late by those who had paid some attention to the study of eye-strain. It was maintained by these recent writers that irritation arose from a lack of balance between the various ocular muscles, and was sufficient to produce various general nervous manifestations, and even such diseases as epilepsy and chorea. The enthusiasm of the exponents of this method equalled that displayed in former years by others who had worked along the same lines. Genital irritation was urged at one time by a distinguished surgeon as a cause of paraplegia. For a time circumcision was regarded as indispensable in the treatment of many nervous diseases, such as infantile paralysis and spastic paraplegia. Subsequently, congenital stricture of the urethra was brought forward as a cause of many neuroses and temporary states of nervous excitability. Recently it had been taught that the peripheral irritation of nasal obstruction was responsible for many respiratory neuroses, of which asthma might be taken as a type, while the ear and its canals, and even the teeth, had not been neglected by those in search of hidden seats of nervous affections. It was not strange, therefore, that to the influence of modern fashion certain ophthalmologists should have yielded, and that inasmuch as the exact relation between internal eye-strain and nervous symptoms had long been ascertained, they should have fallen upon external eye-strain as the sole remaining *point d'appui*. The object of this glance at past investigations was very largely intended not to throw ridicule on them, but to emphasize the fact, which could not be denied, that though each form of peripheral irritation might produce

nervous symptoms, no one form had such a special importance as to warrant the extravagant statements made by its earliest supporters. It had been the history of progress in every line of medical research which had been repeated in this particular. First, extravagant assertions based on hypotheses; then important opposition and negation; lastly, calm, judicial conclusion that truth lay in neither extreme. While it was undoubtedly true that many nervous disorders were produced secondarily by local irritations, it was also true that nervous affections so produced bore very different characteristics from cases of true epilepsy and the well-known forms of mental diseases. When peripheral irritation existed sufficient in degree to be in any way injurious, it might be stated, as a rule, to which there were only occasional exceptions, that nature pointed it out by producing a sense of discomfort or of pain in the part irritated. The proposition had been advanced within the past few years that insufficiency of the ocular muscle was a frequent cause of functional nervous diseases, such as epilepsy and chorea. Any one familiar with muscular physiology knew that muscular power varied constantly. Effort strengthened it if moderate, and weakened it if too long continued. Rest increased it if moderate in duration, but atrophy was the result if too prolonged. The smaller the muscle the greater the relative degree of variation. The speaker had been, during the past three years, constantly testing ocular muscles as to their power, and he had observed under the same tests in the same individual, at different times, considerable variation. He also found a relation between the patient's general condition and the power of these muscles. In neurasthenia and other functional diseases the ocular muscles would at one time show a relative weakness and at another time the test would be negative; but, as these patients recovered, under treatment, their general strength and tone, a proper strength and balance of these muscles returned. In epilepsy there was often very evident variation in the equilibrium of the ocular muscles, to the tests, before and after an attack.

It was the opinion of the speaker that in normal individuals and in those affected by functional diseases the power of the ocular muscles varied considerably from time to time. It was well known by those who were doing much testing with prisms that continued efforts on the part of one or more of the ocular muscles very soon elicited complaint from the patient. In a word, a real strain of an ocular muscle produced discomfort. It was the speaker's experience that, unless an extreme degree of ocular insufficiency existed, patients did not suffer discomfort. It was also his experience that, in functional neuroses of any kind, the moment a patient's attention was directed to an organ, he became conscious of sensations in that organ which might be perfectly natural and yet which he believed to be abnormal. Spontaneous testimony was, therefore, more valuable than if suggested. The conclusions were those drawn from spontaneous testimony, that slight ocular insufficiencies did not produce discomfort; that, in view of the facts already established, variations in the muscular power were natural, and that nature warned us of overexertion in any direction by means of conscious fatigue. It became evident, then, that insufficiency of an ocular muscle incapable of causing discomfort was really a matter of very little importance. The review of the subject of peripheral irritation in general had shown that any such irritation of a serious nature or of long continuance was capable of producing nervous manifestations in a nervous person, and that such irritation, by giving rise to discomfort or pain, was indicated by nature as the cause of the symptoms. Out of three thousand cases of nervous disease, the speaker could cite only one case of true nervous manifestation undoubtedly caused by eye-strain, and in his opinion such cases were rare. It had been a matter of dispute whether so-called reflex disturbances were identical with serious nervous diseases,—such, for example, as hysteria, chorea, and epilepsy. The nervous manifestations arising from peripheral irritation when carefully studied differed from the ordinary neuroses in their history, and therefore presented features which were characteristic. The conclusion, therefore, which seemed inevitable was that while eye-strain or other peripheral irritation might be a source of nervous manifestation, it was a rare cause of nervous disease. The speaker would class eye-strain, either from muscular insufficiency or from errors of refraction, with other kinds of peripheral irritation, neither more nor less frequent and important. He considered it necessary to ascertain in any case of nervous diseases whether any form of peripheral irritation was present. But, unless it had been spontaneously observed by the patient, he would not attach much importance to its presence as an etiological factor unless the nervous manifestations were of such a character and mode of development as to point to a peripheral origin. The speaker did not believe that true epilepsy or

chorea could be produced by eye-strain or cured by its relief, and thought that the general indiscriminate recommendation of treatment directed to the relief of supposed eye-strain in these diseases would soon come to be recognized as malpractice.

Dr. Sachs thought that the paper was not open to discussion so far as he was concerned, because he quite agreed with the author's views, and thought that all neurologists would be unanimous in expression of similar opinion. He deprecated the extravagant way in which cases of reflex neuroses had been operated on. He considered that no difference existed between the neurotic symptoms and the supposed reflex origin of those symptoms. In cases of intestinal irritation due to parasitic invasion it was true that convulsions occurred. In such cases as he had had an opportunity of keeping under observation for years these symptoms had occurred once or twice. No other symptom could be properly classified as due to reflex origin. Even headaches accompanying eye-strain, or reflex headaches from trigeminal neuralgia or dental difficulty, were no more of reflex character than a pain in the thigh due to neuritis in the sciatic nerve. It was the direct irritation of the terminal ends of the nerve which was responsible for the pain, and there was nothing reflex about it. He thought that many of the cases of facial chorea, facial twitching supposed to be due to nasal obstruction, and, treated accordingly, would do much better under the ordinary treatment for chorea. He thought this subject had been overdone generally. There was no more reason for referring epilepsy to eye-strain than there would be to refer spinal epilepsy to phimosis.

Dr. Knapp said he had not seen that nervous symptoms had been at all improved by treatment directed to the eye, outside the inability to use the eye and the discomfort which, of course, was real. Headaches due to insufficiency would disappear upon the proper correction of the errors of refraction, and this was one of the most thankful tasks the eye specialist had to perform. The exaggeration lay in assuming that the most minute degrees of insufficiency called for operation.

Dr. Roosa, in the course of his remarks, said that in his opinion there never had been anything in the doctrine which advocated the operation on slight degrees of insufficiency for the cure of epilepsy and chorea. He had never felt any particular interest in the discussion, but it had served to bring out a few points, and would, he hoped, settle them forever. The conclusions of the author's paper were as nearly in accord with conclusions of his own as they could possibly be made.

Dr. C. S. Bull spoke in strong terms of the effect of the present method of living in this country, and especially in New York. The high nervous tension necessary to the fulfilment of the business and social requirements he considered answerable for the extreme prevalence of neuroses of all kinds. The partial tenotomy of the ocular muscles for producing any lasting effect in the direction alleged for the operation was absurd. The prismatic test of the muscular strain was the proper evidence for determining whether partial or complete tenotomy was to be done.

Dr. Birdsall said that he heartily agreed with the conclusions of Dr. Starr. Still, he thought, there existed a class of cases in which there might be a reflex element from peripheral irritation, which set up a train of nervous disturbances and symptoms, the removal of which might bring relief. He thought that a certain instability in the condition of the nerves, existing in some individuals, was enough in this class for a very slight peripheral irritation to set up a very profound disturbance. No matter what the operation might be which was undertaken for the relief of this class, such patients would continue to present themselves with the same or some allied symptoms. He believed that an effort should be made, when there existed evident disturbance in the function of an organ, to restore the lost equilibrium of the muscles, or between sets of muscles. Of course, some cases, in which the conditions arose out of hereditary tendencies, might be beyond relief by operative interference, but many of the cases were dependent upon present inaccuracies of habit, overwork, over-excitement, or other causes.

Dr. Mary Putnam Jacobi said that the title of Dr. Starr's paper covered much more ground than its subject-matter did. Taken in its widest sense, the "relations of peripheric lesions to sensory phenomena" might be said to embrace the entire range of organized life, at least, if we substituted the term "impressions" for that of "lesions." The fundamental function of the nervous system was directed towards the central co-ordination of the multitudinous impressions which were incessantly impinging upon the periphery of the organism, and to the direction of the resultant impulse into motor channels. Hence it was to be expected that disordered phenomena would arise, either when there were morbid impressions, or when the central co-ordination of normal im-

pressions was defective, or when the channels of centrifugal impulse were blocked or impeded. The peripheric projection of central processes further complicated these complex relations. We all knew of the distinct sensations of the extremity of amputated limbs when the nerves of the stump were irritated. Weir Mitchell had given some remarkable examples. The hallucinations of hearing in the insane illustrated the double possibility of causation for the same phenomenon. The auditory phenomenon might be excited entirely by irritation of the brain centres, or lesions of the labyrinth or middle ear might be the proximate occasion for delusions of whispering, of persecution, etc. These delusions were only excited in a predisposed brain, and the fact illustrated the fundamental doctrine in the whole matter,—namely, that peripheric impressions, however morbid, could not excite central phenomena unless the nerve-centres were already predisposed. The train must be laid; then, but not till then, the touch of a match would cause an explosion. In grave hysteria the central predisposition predominated, or existed alone, and innumerable peripheric symptoms were to be regarded as projections of central processes, as cerebral hallucinations of pain or motor irritation. On the other hand, utero-ovarian disease might cause hysteroid symptoms even in persons of quite normal nerve-centres, but these differed from true grave hysteria. But it was surprising how the suffering from utero-ovarian disease varied, not in proportion to the extent of the disease, but to the sensibility of the nerve-centres towards which its irritations irradiated. The speaker had been much struck with Dr. Starr's remark that epileptoid, hysteroid, and choreoid symptoms, dependent on peripheric lesion, would be distinguished objectively from true epilepsy, hysteria, and chorea; and especially that the epileptoid attacks were remarkable for their sudden frequency, while in true epilepsy the attacks at first came on at long intervals. She had recently seen this observation confirmed in a little boy of 4, where an operation for circumcision, plus bromide treatment for eighteen months, had entirely cured an onset of rapidly recurring attacks resembling *petit mal*. In the most striking and authentic cases of remote effects from peripheric lesions the effect consisted in some isolated symptom that was quite different from a complex disease. The most famous class of cases were the so-called reflex paralyses, attributed by Brown-Séquard to vaso-motor spasm in the nerve-centres, to Leyden to ascending neuritis, by Jaccoud and Weir Mitchell to exhaustion from shock, by most recent writers to inhibition. Brown-Séquard's theory was entirely exploded; but it seemed as if the three remaining theories might all apply to different cases, but especially the doctrine of inhibition. Weir Mitchell had related in detail seven cases of paralysis of one or more limbs occurring suddenly at the same moment as dried paralysis from traumatism of another limb. Paraplegia from utero-ovarian disease undoubtedly existed, but the question always arose whether it was produced by direct inhibition of the lumbar-cord centres or whether it could be due to a coincident hysteria. The speaker had observed one case where a profoundly neurotic girl of 20, after suffering for some time from moderate ovarian paræsthesia in the abdominal region, had become suddenly but incompletely paraplegic. A few months later Dr. Thomas had found a prolapsed ovary, but distinctly denied any "reflex" character to the paraplegia, which he called "hysterical." It had continued to grow worse until the girl had been unable to execute the slightest movement of the lower limbs, even the toes. She had remained bedridden for eight years, and had then been considered by a neurologist to have an incurable myelitis. She had suffered terribly from dysmenorrhœa, by which she had been prostrated for nearly three weeks out of every month. For this Dr. Mundé had been consulted, who, having tried many other means without success, had removed the ovaries simply to relieve the suffering, and without expecting to affect the paralysis. But in ten days after the operation the patient could move her toes, and in a short time recovered her ability to work. She was also relieved of her menstrual suffering, but remained a good deal of an invalid. Dr. Mundé reported the ovaries as macroscopically normal in structure, although prolapsed. Like Dr. Starr, the speaker had read with great interest the recent paper by Dr. Goodell. Certainly its statements could be endorsed, that there had been an immense exaggeration in referring symptoms of all kinds to entirely insignificant lesions of the utero-ovarian system, or even in assuming the necessary existence of these lesions where they could not be tangibly demonstrated. The course of reasoning in such cases implied often a wilful lack of logic and of care in analyzing the proportion of evidence, perhaps also deliberate neglect of the pathological laws of all parts of the organism beyond the range of the specialist. The speaker could not refrain from noting that, had such errors been committed

by any special class or race, or by practitioners of one sex alone, they would have been deemed sufficient to pronounce that sex quite incompetent for practice.

DR. L. H. SAYRE spoke in advocacy of the benefits to be expected from operative interference for nervous phenomena obviously due to reflex causes originating in the genitals of young persons.

The CHAIRMAN said that he had known cases of nocturnal incontinence, and of night-terrors in children, to be cured by cutting off the prepuce. He had seen cases of epilepsy benefited by this operation, and had operated on quite a number of epileptics, and seen them improve after circumcision. To satisfy himself, however, he had in two cases cut out a large area of skin from the back. These two patients had improved just as much as those in whom the operation for phimosis had been done. Another patient, who had been having five to ten epileptic attacks a day, had come to the city for advice and treatment, and did not have a single attack while here, the fits coming on again when the patient returned home. Some patients would have a series of seizures during several months, when these would cease perhaps for years. He had never seen anything but slight improvement follow operations on the ocular muscles or from the use of prisms in epilepsy. As to chorea, he only knew of three cases in which the method had been tried, and not the slightest improvement had resulted. Cases of migraine and of that form of headache which was a neurosis—neurotic, not neuralgic, in character—he had been informed were greatly improved by operation. One case of his own he could also cite,—that of a man of active prominence, who had been incapacitated for a year by some vague form of nervous trouble, and was enabled to return to his work in a short time after his ocular muscles had been exercised by means of prisms. He thought that the nervous systems of such individuals were, as had been suggested, of an unstable character, unable to properly seize and co-ordinate the impressions, and that this very condition of instability which gave rise to the nervous phenomena observed was the condition most likely to respond to operative interference.

DR. STARR said that he did not wish to deny the possibility of certain reflex manifestations as likely to arise from genital irritation, but believed the underlying condition was an unstable and weak nervous system, and peripheral irritation was only one, and not necessarily an important, cause of certain nervous phenomena.

ANGINA PECTORIS AND PSEUDO-ANGINA.

There are few affections which cause us greater anxiety than the group of symptoms known as angina pectoris; for the fear of sudden death supervening in one of the attacks haunts the unfortunate sufferer. This fear is, as we know, only too well justified; for though the statistics on the point vary very much and cannot be wholly relied upon, yet we know that in a fair percentage, estimated from five to ten per cent., sudden death does take place. We know, also, that in many cases the anginal attacks may occur without a fatal issue, and in some they may after a time completely disappear. It may, therefore, considering the variable prognosis, not be without interest to study more closely those cases which often, in spite of all treatment, terminate fatally, and which are now known as *true angina*, and those where, though the symptoms themselves have all the characters of angina, no fatal result is feared, and which are spoken of as *pseudo-angina*.

Let us consider first the true angina pectoris. Its symptoms consist of paroxysms of pain in the præcordial region, radiating in other directions, especially towards the left shoulder and along the course of the left ulnar nerve, with the feeling of great anxiety, of oppression, with more or less dyspnœa, and of pallor of the face and variations in the pulse.

These symptoms vary very much as to their intensity, and all of them are not always present. Besides the abortive attacks where the symptoms are slight we may, according to the greater preponderance of one or other of them, distinguish several types.

In an elaborate paper read by DR. JULIUS DRESCHFELD before the Manchester Medical Society, December 4, 1889 (*Practitioner*, January, 1890), the author calls attention to the fact that three different types of true angina pectoris may be recognized,—1, the respiratory type; 2, the neuralgic type; and 3, the vaso-motor type. That such a distinction is not artificial will be seen from the following:

First, as to the *respiratory type*. In most cases of true angina there is not the dyspnœa which we notice in asthmatic attacks; the patient suffers from great oppression in the thorax, the respirations are superficial and irregular, and the patient has a feeling of suffocation; he is unable to move; he stands fixed, and looks for some support. In some few cases, however, there is marked dyspnœa, the breathing is labored, the respirations are

deep, and the patient, instead of remaining fixed to the spot, rushes to the open window or into the fresh air. Such cases are rare, but they are of true anginal nature, and may terminate fatally.

In such cases the symptoms are not relieved through the use of nitrite of amyl or nitroglycerin, but may be removed by a subcutaneous injection of morphine. Post-mortem examination in such cases will often disclose relaxation of the heart, the left ventricle well dilated, and the left coronary artery showing atheroma. The chief symptom is temporarily quickened pulse in addition to dyspnœa.

The *second type* is the *neuralgic type*, and the principal symptom is the pain. This is situated usually beneath the sternum or præcordium, radiating to the left shoulder, and thence along the inner side of the arm to the elbow, or often to the fourth and fifth finger of the left hand. The pain may radiate to the right shoulder and right ulnar nerve, to the left side of the neck, to the back, abdomen, and even lower extremities; the abdominal pain may be situated in the epigastrium, or in the ovaries or testicles. Along with the pain, or often after the pain, we notice numbness and tingling and other abnormities of sensation. When, then, pains are associated with the after symptoms of angina the diagnosis is easy. Sometimes, however, the neuralgic pains may form the chief symptom.

The *third type* is the *vaso-motor type*, which has long since been described as a separate form by Nothnagel. This type is chiefly characterized by vaso-motor symptoms, in some cases following, in others coexisting with, the præcordial pain. There is marked pallor, a quick pulse, regular or intermittent, sometimes with increased, at others with diminished arterial tension. Vertigo, paræsthesia, or anæsthesia of the left arm, or of both arms, are often associated with these vaso-motor symptoms, and flatulence and vomiting occasionally occur towards the close of the attack. The vaso-motor type is especially seen in pseudo-angina; in true angina the vaso-motor symptoms are often preceded by præcordial pain and præcordial oppression.

The most common cause of true angina is some affection of the coronary artery obstructing the lumen of that vessel; the lesion usually found is atheroma of the coronary artery; occasionally thrombosis, embolism, or, especially in younger persons, syphilitic disease of these arteries is seen; so also endocarditis and diseases of the aortic valve are often associated with attacks of angina; in such cases the coronary arteries are easily compressed and their lumen becomes narrowed.

Dr. Dreschfeld explains the mode of causation of the symptoms of angina pectoris as follows: According to Gaskell, the sympathetic nerve with its cardiac terminations is the motor nerve of the heart, and its stimulation causes catabolism or destructive changes; while the vagus is the inhibitory nerve, and its stimulation causes anabolism or constructive changes,—*i.e.*, diminished activity followed by repair of function (Hamilton). From the observations of Dr. Ross we now know that the sensory spinal nerves are closely associated with the visceral nerves; and we know from Dr. Gaskell's observations that the second dorsal nerve is the spinal sensory nerve associated with the sympathetic of the heart.

Now, affections of the coronary arteries produce disturbances in the nutrition of the heart, and we have either acute myomalacia (hemorrhagic infarct), which is an acute affection, and may lead to chronic induration or fatty degeneration, or most commonly we find atheroma of the coronary arteries leading to fibroid changes of the myocardium without myomalacia. A heart so affected may often show only signs of cardiac weakness; but if from some cause, such as increased muscular activity, mental excitement, or alcohol, etc., there is a sudden increase of arterial or intracardiac pressure, the cardiac nerves become irritated, and as the result we have cardiac pain, oppression, and alteration of the pulse. If the sympathetic cardiac terminations are irritated we have the associated pain in the left shoulder, due to the irritation of the sensory branch of the second dorsal, and as the course of these nerves is centripetal we can easily understand the radiation to the other sensory nerves, while irritation of the vaso-motor centre will explain the general vascular disturbances. The pneumogastric, acting as the anabolic nerve, comes into play to restore the function by diminishing the activity of the heart, and thus the paroxysm passes off as the heart is set at rest.

To explain the præcordial pain, some believe that the sympathetic contains sensory fibres; others compare the pain to the cramp-pain often noticed in tonic spasms of a voluntary muscle; while others hold that in the anginal attack both the pneumogastric and

the sympathetic are implicated. Dr. Dreschfeld is inclined to agree with those who hold the last view; the primary cause being a disturbance of the nutrition of the heart, we are more likely to have irritation of both sensory and motor nerves, as seen in the occlusion of peripheral arteries.

The anginal attack is thus, in great measure, due to the want of the proper regulative mechanism between catabolism and anabolism. This explains the varying behavior of the pulse, of blood-tension, etc., in the anginal attacks.

The account we have given as to the causation of the symptoms also explains satisfactorily the unfortunately by no means uncommon termination *in death*.

Death may occur, first, from the unrestrained action of the sympathetic; the pulse gradually gets weaker and quicker, the heart's sounds are scarcely audible, and eventually the heart's action ceases. Secondly, death may be due to a tonic contraction of the heart; and here, again, Gaskell has shown that, when the heart's muscle is exhausted, it behaves like an involuntary muscular fibre, and shows a permanent or tonic contraction. Thirdly, death results from the affection of the centre which presides over the automatic action of the heart, and which resides in the cardiac ganglia. Where no lesions of the myocardium or the coronary arteries are to be found, we may explain the occurrence of sudden death as attributable to sudden spasm of the coronary arteries.

As regards the pseudo-anginal attacks, a hysterical element is in many cases present, or pseudo-anginal attacks may appear in various affections of the nervous system, such as gout, neurasthenia, chronic nicotinism, and affections of the stomach and intestines. While in true angina the cause is invariably to be found in some abnormal condition of the nerves, in pseudo-angina the cause is usually a reflex irritation. We may, therefore, classify the affections in which pseudo-angina occurs under two groups. *One* group consists of those in which there is central irritation, and here the irritation may attack the centre directly or indirectly, the causal agent being of a toxic nature and circulating in the blood. To the first sub-group belong hysteria, neurasthenia, and other affections of the nervous system, such as locomotor ataxy; the *second*, or toxic sub-group, includes gout, chronic nicotinism, chronic alcoholism, excessive use of tea, etc.

To the second group, where the irritation affects the cardiac nerves reflexly, we assign gastric catarrh, nervous dyspepsia, gall-stones, etc. The irritation starts here from the terminal sensory nerves in the different organs, and is reflected to the ganglionic apparatus of the heart. According to some the pseudo anginal attacks in affections of the stomach and intestines are due to the formation of ptomaïnes which are absorbed into the blood, and may thus act either on the centre or on the peripheral terminations of the cardiac nerves.

Dr. Dreschfeld offers a number of points which will aid the recognition of these different forms of angina. Thus, the pseudo-anginal attacks usually occur in persons suffering from hysteria. The hysterical pseudo-angina pectoris is distinguished from true angina by the following points:

First.—The age of the sufferer. Persons suffering from hysterical angina are young, as a rule, yet true angina may occur in young females.

Second.—The attacks occur not after violent exertion, but often without a palpable cause, and at regular periodic intervals.

Third.—The radiation of the pain is along the sternum and along the insertions of the diaphragm at the back.

Fourth.—There is always marked dyspnœa, and the vaso-motor phenomena are very prominent.

Fifth.—The patient shows a great deal of excitement, and there is not the anxious expression of countenance.

Sixth.—The coexistence of other hysterical symptoms, such as hemianæsthesia, contraction of the field of vision, hystero-epileptic attacks, etc.

Seventh.—The absence of any signs of heart-disease.

Again, both the cerebral and cerebro-spinal form of neurasthenia are often accompanied by anginal attacks, the nature of which, however, may be recognized by the fact, *first*, that the attacks come on without any muscular exertion, and after worry or mental trouble.

Second.—The attacks are short. The cardiac pain is not very great, but there is marked pallor and irregularity of the pulse, which often lasts for days.

Third.—The symptoms improve on walking or other slight muscular exercise.

Fourth.—The attacks are often either preceded or followed by insomnia. Of the toxic variety, the best known is the angina occurring in smokers and in gout.

In smokers, anginal attacks are not so rare, and physiological experiments have abundantly shown the effect of nicotine on the vaso-motor nerves, on the pneumogastric, on the muscles, and on the viscera.

The anginal attacks are here preceded by an irregular, occasionally intermittent pulse, by palpitations which persist for some time, and in the attack itself there is cardiac pain, usually limited to the heart, and great oppression. The attack is followed by pallor and sweating, and the pulse may then become slow, and show increased arterial tension, or remain quick and intermittent for some time.

The symptoms disappear as soon as the patient gives up smoking. In considering this form of angina one has, however, to bear in mind that occasionally excessive smoking may lead to atheroma and to affections of the myocardium and valves of the heart, and thus true angina may occur occasionally in chronic nicotinism.

In gout we often meet with true angina, yet pseudo-angina does occur; and here, again, the absence of cardiac hypertrophy and of atheroma will assist us in the differential diagnosis. The pain is characterized by a more limited pain over the heart, by general vaso-motor disturbances, and especially also by an irregular and intermittent pulse, which may last for many weeks or even months.

Finally, gastric and intestinal affections produce anginal attacks in a reflex way. Palpitations, an intermittent and irregular pulse, with more or less dyspnœa and general discomfort, are often noticed in dyspeptic persons and in affections of the liver. Occasionally, however, we have in these diseases pseudo-anginal attacks.

These attacks are characterized by the following features: First, they come on after meals; secondly, there is often epigastric pain, with associated pains in the back from the fourth to the sixth dorsal nerve; the anginal pain is præcordial, rarely substernal, and not so severe as in true angina; the pulse is irregular; there is pallor, with often profuse sweating. The attack often lasts several hours. According to Huchard, there is in these cases evidences of dilatation of the right heart and increased tension in the pulmonary artery, and this is in accordance with the results obtained by Morel and Arloing, who found that on irritation of the exposed mucous membrane of the stomach, a manometer being inserted in the pulmonary artery, a rise of blood-pressu was noticed.

The therapeutics of angina are now so we known that but little mention is require Apart from the treatment of the prima affection which gives rise to the symptom there is the treatment of the attack itself. C the nitrites, the nitrite of amyl acts quickl but its action is of very short duration; nitr glycerin, on the other hand, has a more pe manent effect, and may be given for a fe days following the attack. In the case angina, where the chief symptom is dyspnœ the nitrites have no effect whatever, and the pseudo-anginal attacks of neurasthen gout, and chronic nicotinism they are oft of little use. The good effects of morphi are too well known to be mentioned. Mo phine should, however, be avoided when t pulse is feeble and quick, and when there great pallor with profuse perspiration. Th inhalation of chloroform has been recom mended by several authorities. Dr. Dresc feld has only tried it in two cases, and in on very soon after the inhalation, the pulse b came irregular, thread-like, and collapse s in. He therefore offers a caution against i use. Subcutaneous injections of ether hav several times been found useful where th heart's action appeared very weak.

TREATMENT OF GOITRE BY INTERSTITIAL INJECTIONS OF TINCTURE OF IODINE.

Several years ago, Luton, of Rheims, pro posed the treatment of goitre by the intra parenchymatous injections of undiluted tinc ture of iodine. This method was afterward adopted and commended by Professor A Lücke, and by Duguet; the latter has pub lished a memoir on the subject, in which h has reported numerous successes.

Terrillon, surgeon to the Salpêtrière, ha published, in the *Bulletin Général de Thérapeu tique*, a communication in which he advise the iodine injections in bronchocele as mor likely to give curative results than those o tincture of iron or of ergotin, counselled b former surgeons; and he gives minute direc tions how to carry out this treatment success fully.

In order properly to practise this injection says Terrillon, there are three points indis pensable to know:

1. The operator must be sure that he ha penetrated the substance of the tumor befor pushing the injection.

2. He must avoid, as far as possible, transfixing the veins which ramify in the cellular tissue in front of the neck. In fat patients the veins are not very apparent, and it is desirable, before inserting the needle, to find a place where no veins shall be in the way. The patient should be made to take a full breath, during which the swollen jugulars become prominent, and they can then be very easily avoided.

3. The third important point is to have a hypodermic syringe that is perfectly clean, in order to avoid the introduction of infectious germs. Terrillon recommends that the syringe with its needle should be left a certain time in boiling water before being used.

After having taken these precautions to obtain asepsis of the instrument, and, after having chosen the place to make the injection, the operator takes the needle and plunges it slowly, but without hesitation, into the hypertrophied thyroid body. To avoid the infiltration of liquid in the cellular tissue of the neck, it is necessary to insert the needle to the depth of at least two or three centimetres, and to be assured, by the movements impressed on the tumor and by the feel of the needle, that the latter has penetrated the glandular substance. Having introduced the needle deep into the thyroid body, the surgeon unscrews and removes the syringe before making the injection, in order to see whether any blood flows by the canula. This precaution is needful in order to avoid the injection of iodine into the interior of a vein. If blood should flow at the point of puncture, another place is chosen, and the same manœuvre is repeated.

After being assured that a vein has not been pricked, the syringe is readjusted, and half a gramme of pure tincture of iodine is injected into the tumor. If this injection is well supported, if the patient experiences no other symptoms than a slight pain with a little swelling, the next time a whole syringeful is injected. After having made the injection and introduced the desired quantity of liquid into the tumor, the needle is not immediately removed, but is left a few seconds, in order that the liquid may be sufficiently diffused into the parenchyma of the gland, and that it may not flow into the subcutaneous cellular tissue.

Terrillon recommends to make but one injection at a time, and to have four or five days' interval between the injections, in order to guard against the danger of iodism. A little pain immediately after the operation at the site of the puncture, followed by shooting pains into the back of the neck, the lower jaw, or even the shoulder, should not give alarm, as these pains are rarely of long duration. Sometimes the patients taste iodine in the mouth after the injection, due to the elimination of iodine in the saliva. A little swelling follows the injection; this rarely goes on to suppuration.

Cases have been recorded where goitre has been benefited and even cured by one injection of tincture of iodine. Ordinarily the injections have to be repeated several times, and sometimes as many as twenty are required to bring down the thyroid body to its normal volume. At the point where the iodine is injected, there takes place a destruction of the tissue elements, which undergo fatty transformation, and end in being absorbed. The irritation of the tissues causes the formation of a point of cicatricial tissue, which, in undergoing retraction little by little, produces shrinkage of the tumor. The injection of iodine acts, then, by provoking the fibrous transformation of the goitre. A sufficient number of injections must be made, so that all points of the thyroid body may be brought under the influence of the medicinal agent. In this way complete atrophy of the morbid growth is eventually obtained.

Terrillon believes that the tincture of iodine constitutes the most efficacious treatment of goitre. At the same time, other irritant liquids may be injected into the thyroid body, such as a ten per cent. solution of iodoform in ether. This acts in the same way, by provoking a non-suppurative inflammation of the tumor. Fowler's solution has been employed, but this is toxic, and can with safety only be injected by drops. Moreover, it is not so certain in its action as iodine; and the same may be said of ergotin, which was formerly much used in parenchymatous injections from the supposed power to cure atrophy of the hypertrophied gland-elements by lessening the blood-supply.—*Boston Medical and Surgical Journal*, January 16, 1890.

AURAL COMPLICATIONS IN ACUTE SPECIFIC FEVERS.

At the meeting of the Harveian Society, held January 2, 1890, DR. HILL remarked that more than fifty per cent. of the cases of chronic ear-diseases commencing in early life were traceable to the aural complications of fevers (*Lancet*, January 11, 1890). The

somewhat higher percentage observed before Meyer demonstrated the importance of naso-pharyngeal observations were doubtless due to the fact that the exanthemata are potent exciting factors in the induction of adenoid overgrowth of the pharyngeal tonsil in those of "lymphatic temperament," and indirectly of ear lesions, and cases now rightly attributed to post-exanthematous "adenoid growths" were formerly classed among the direct aural complications of acute fevers. After detailing English and foreign statistics dealing with the frequency of ear symptoms in the course of scarlet fever, measles, whooping-cough, mumps, and other states, the destructive nature of these complications on the membrana tympani and ossicula, if untreated at the time, was pointed out and contrasted with the rapid recovery from perforation, discharges, and impairment of function when similar conditions were not neglected, but treated *secundum artem*. In measles, pneumonia, and pertussis, in which the inflammation spread up the Eustachian tube, the otitis could often be prevented, and nearly always arrested or limited to the non-suppurative variety by appropriate naso-pharyngeal and inflation treatment. If neglected, suppuration of the middle ear resulted from tubal obstruction and accumulation and retention of tympanic secretion; the tendency to this acute suppurative stage was more marked when the middle ear became involved in scarlet fever, small-pox, and diphtheria, and if unrelieved by immeate incision of the membrane on the onset of pain or evidence of intratympanic accumulations, the destructive processes above alluded to resulted, and frequently also involved the labyrinth. If, on establishing proper drainage, together with frequent syringing of the meatus with antiseptic lotions and inflation by the tube, the pain was unrelieved, the application of leeches or incision for mastoid inflammation, and of Leiter's continuous cold coil for less limited pain, was recommended. The use of internal anodynes also afforded relief in some instances; but if a thorough otological examination was not made and appropriate surgical measures adopted, the mere relief of pain often lulled to false security, while irreparable destruction was going on in the delicate auditory organ. In cerebro-spinal fever, mumps occasionally, and in typhus, the labyrinth was usually primarily involved. Such a complication might be aggravated by such remedies as salicine or quinine, which were best avoided in acute aural disease; iodide of sodium internally, or pilocarpine hypodermically, being the most serviceable drugs. In conclusion, Dr. Hill pleaded that aural symptoms should invariably be looked for early in the course of fevers, in the same way that the thoracic and renal organs were watched. With appropriate nasal and pharyngeal treatment, otitis could often be prevented or mitigated in severity. If enlarged tonsils or adenoid growths interfered with treatment they should be removed. While anodynes were indicated for pain, other treatment, including early incision of the tympanic membrane, were necessary in order to limit rapidly destructive suppurative processes in the middle ear and labyrinth.

The PRESIDENT remarked upon the extreme importance of diminishing in any way the great dangers which resulted from ear-disease caused by the specific fevers. Those who met with many cases of cerebral abscess and other brain lesions from this cause would best appreciate the points of Dr. Hill's paper.

MR. LENNOX BROWNE said the anodyne treatment led very often to a fool's paradise. He thought that a rise of temperature in the course of a specific fever was a guide to the diagnosis of ear-trouble as of other complications. Some of the ear-troubles of acute fevers were, indeed, due to pharyngeal and not primary aural trouble, but only when there was no discharge from the external meatus. When discharge was present there was always aural disease. The order of importance of the specific fevers in relation to the production of aural trouble was, in his experience, the following: scarlet fever, measles, pertussis, and mumps. Purulent catarrh was rare in diphtheria. He himself would not incise the tympanic membrane unless there was very great congestion or evidence of fluid in the ear. There was no danger of leaving a hole in the tympanic membrane after such an operation. When, however, rupture of the membrane resulted from ulceration, a permanent opening was frequently left. Unlike Dr. Hill, he had found atropine of great service in relieving aural pain. He supported Dr. Hill in his recommendation to scrape the throat free from growths even during an acute fever.

DR. SPICER inquired as to the method of using pilocarpine. An enlargement of the pharyngeal tonsil should be treated before an acute specific fever occurred.

DR. HILL, in reply, alluded to the difficulty

of obtaining good nursing for cases of ear-disease. Pilocarpine should be injected subcutaneously in the form of a two per cent. solution. He also thought pertussis of some importance in the production of aural trouble.

THE RATIONAL TREATMENT OF BRONCHIAL ASTHMA.

In the treatment of asthma the most important factor is, of course, the recognition of the starting-point of the paroxysm. According to FREDERICK I. KNIGHT (*Boston Medical and Surgical Journal*, January 23, 1890).

The factors, whose combination produces a fit of asthma, are—

1. The neurotic habit.

2. A morbid condition somewhere in the respiratory tract, it may be in the upper air-passages or in the lungs themselves, whose irritation shows itself by a reflex exhibition in the bronchial tubes.

3. The exciting factor, which may be atmospheric, digestive, mental, or other remote irritations, which act by reflex on the bronchial tubes.

All treatment of asthma is naturally divided into what may be done for the relief of the paroxysm, and what may be directed to the underlying causes, and which, therefore, may be considered more in the light of cure. For this reason it is the second factor which we are most anxious to remove, if it can be done. Whether this factor is always necessary,—that is, whether there must be something morbid in the respiratory tract, or whether we may have bronchial asthma with a perfectly healthy respiratory area is not, perhaps, definitely settled, but there is no doubt but that we usually have this factor.

In the first place, various morbid conditions of the upper air-passages are productive of asthma, such as polypi, a deflected septum, hypertrophied turbinated bodies, and adenoid vegetations in the naso-pharynx. Unfortunately, however, although removal of these obstructions may for a time relieve the asthmatic attacks, they may recur very soon without anything in the nose to account for it. Certainly it behooves us in every case of asthma to make sure that we leave no nasal obstruction which is capable of relief.

In the conditions where the improvement from operation is only temporary, or in which no nasal disease is to be found, we must, of course, look for medical aid, and it should here be noted that, while in some cases one drug which had proved inefficacious, in another instance of asthma in this case will prove of great benefit. Probably no one remedy has given as much relief to asthmatic patients as potassium iodide,—a remedy which acts directly upon the bronchial tubes. The cases in which Dr. Knight thinks this remedy is most apt to give relief are those in which there is present more or less bronchitis, as it may be expected to thin the bronchial secretion, and possibly facilitate expectoration; further, it depresses the heart and lowers blood-pressure. It may also act in somewhat resolving old thickenings in the bronchial tract, which serve as a source of irritation. A large dose is often necessary for relief, and rapidly-increasing doses may be given until 20, 30, 40, or more grains are given three times a day. It should be given on an empty stomach, largely diluted with milk, and without any admixture of syrups. The iodide seems especially serviceable in cases which are hyperæmic, or due to the vaso-motor paresis. In those cases in which it would seem as if bronchial spasm was the principal feature, the use of the nitrites gives relief. The amyl nitrite, nitroglycerin, and sodium nitrite, theoretically, should all have about the same action, but the author states that he has never been able to get the same decided effect from the sodium nitrite as from the others, perhaps because too small doses were employed. Arsenic and strychnine relieve, probably, by their action upon the neurotic base. They are particularly indicated in what are called the paralytic cases, in which there does not seem force enough in the respiratory muscles to empty the lungs of air.

In seeking to obtain immediate relief from the paroxysms of asthma, assistance may be found in some cases from a subcutaneous injection of morphine, the relief from which is more lasting than that obtained from other drugs. Asthma may in one case be due to a spasm of the bronchial muscle, and in another to vaso-motor paresis; therefore the subcutaneous injection of morphine is more apt than any other drug to give a favorable result. Still, it is true, that while in many cases it would prove highly successful, yet in others it will entirely fail to give relief and may even induce an attack. Dr. Knight explains the relief which morphine gives as due to its producing contraction of the small vessels, so relieving the hyperæmic form of asthma, while the spasmodic form is relieved, on the other hand, by its direct sedative action on muscular tissue. On the other hand, the fact that

morphine sometimes produces an attack of asthma is explained by its reducing the sensibility of the respiratory centre, inducing an attack in the same way as sleep does. The nitrites, in one form or another, give relief to many cases. This has been usually ascribed to direct sedative action upon the bronchial muscles. Dr. Knight suggests that, perhaps, in those cases which seem not to be relieved, but even to be aggravated by them, that there may be already a vaso-motor paresis, which is aggravated by the nitrites. Grindelia gives relief in very many cases, apparently acting as an antispasmodic, as lobelia does, but is a much safer remedy than the latter. Coffee, according to Hyde-Salter, acts by counteracting the tendency to sleep, and the consequent diminished sensibility of the respiratory centre.

Dr. Knight thus calls attention to two very important points,—first, that certain cases are relieved by operative means in the upper air-passages; and, second, that the pathological conditions in an attack of asthma are not necessarily always the same, and relief is only to be expected by a correct recognition of the cause of the paroxysm.

SURGERY OF INFANCY AND CHILDHOOD.

At the meeting of the Medical Society of London, held January 6, 1890, the first Lettsonian Lecture was delivered by MR. EDMUND OWEN on "Selected Subjects in the Surgery of Infancy and Childhood" (*British Medical Journal*, January 11, 1890).

Beginning with the treatment of enlarged glands of the neck, the lecturer remarked that the presence of branching scars implied a blame either of the parents for not seeking advice in good time, or of the medical attendant for not availing himself of the means at his disposal to effect a cure without waiting for suppuration and consequent loss of tissue. He urged that instead of painting the skin over the glands with iodine or iodide of lead, the duty of the surgeon was to remove the enlarged glands without loss of time, and before the patient had been exposed to the risk of the adjacent glands becoming enlarged, and the organism exposed to the dangers of septic absorption. He then took up the question of causation, and pointed to the pharynx and tonsils as being likely sites for the entrance of septic poisons into the system. After alluding to the advantages attending constitutional treatment, change of air, etc., in enlargement of the glands, for which no exciting cause could be made out, the lecturer cautioned his listeners that perfect success could not be guaranteed in every case, or even in most cases, as the result of a first and single operation, but he claimed, however, that the effect of removal of as much as possible of the diseased tissue was always attended with marked benefit to the patient's general health and a period of arrest, if nothing more, in the further progress of the malady. He then proceeded to describe the *technique* of the operation: He makes an incision along the anterior border of the sterno-mastoid, over the tumor, of sufficient size to allow of the necessary manipulations, extending through the skin and down to the deep fascia, completing the laying bare of the glands by means of a steel director and forceps. Vessels are torn through with the forceps so as to prevent unnecessary hemorrhage until the only connections of the gland are the lymphatic vessels above and below. The enlarged glands are then removed without difficulty, the cavity which remains being washed out with a mercurial solution and dried, the edges being brought together by means of sterilized horse-hair sutures and a small drainage-tube inserted. To prevent any scars as the result of the sutures these are removed not later than the second or third day. A strip of moist protective is placed over the wound, surmounted by a pad of cotton wool, and the patient is placed in bed, the head and neck being steadied with sand-bags and perfect immobility maintained. The next day the dressing is removed, and the drainage-tube, and possibly the sutures, removed, the edges being approximated by strips of waterproof strapping. The child is kept recumbent as long as possible, and when allowed to get up, the neck is kept at rest by means of a stock of stiff buckram covered with linen. If, on making the incision, a suppurating cavity is found, the lecturer advocated laying the cavity well open, cleaning it out thoroughly, and making due provision for drainage. In a few cases it has been found necessary to divide the attachment of the sterno-mastoid muscle in order effectually to deal with the enlargements beneath it. He insisted upon the fact that the progress effected in the surgical treatment of enlarged glands in this situation was mainly due to Mr. Pridgin Teale. The lecturer narrated a case in which he had operated on a child for a sarcomatous gland of the neck, and pointed out that although in certain cases no treat-

ment short of extensive operation could possibly prove of avail, and though the shock attending such an operation might be sufficient of itself to determine a fatal result, yet, as the alternative was inevitable death, he urged that the most serious risk should be unhesitatingly accepted, and the operation undertaken. The lecturer passed on to discuss congenital cystic hygromata. He was of opinion that they were best left alone, or, at the most, tapped, as they rarely caused serious symptoms, and proved very troublesome things to deal with if operated upon. He mentioned that although he had seen dozens of these dilated lymph spaces in infants and children, he had never met with them past the age of puberty. He inferred, therefore, that absorption invariably took place, preceded or not by inflammation. He showed drawings and photographs of several cases of this kind illustrating their principal clinical features. He pointed out that the tumor of hygroma was altogether different from "hydrocele of the neck," due to non-closure of one of the branchial clefts, with subsequent distention of the cavity. Thus created, it differed in having a definite rounded contour, and in consisting of a single cyst, which on evacuation left the neck its normal shape. Such tumors were, he said, easily cured by incision and drainage. He concluded by alluding to the experimental researches of Horsley and others bearing on the effects of the removal of the thyroid gland in connection with cases of sporadic cretinism, and urged that in these days of restless, active, and aggressive surgery, control experiments upon living animals were not only justifiable but necessary.

DIURETIC PROPERTIES OF SUGARS.

In the *Bulletin Général de Thérapeutique* for January 15, 1890, DR. S. MEILACH publishes an elaborate experimental essay, made under the direction of Professor Dujardin-Beaumetz, as to the diuretic properties possessed by different sugars. The author concludes that both lactose and glucose are active diuretics belonging to the group of direct renal diuretics, for when the substances are injected into the veins of animals there is no increase of blood-pressure, or in administering to man there is no corresponding modification in the pulse. Further, it is claimed that diuresis may be produced without either the lactose or the glucose passing into the urine. They are destroyed in the organism, and, therefore, in addition to possessing diuretic properties, and thus acting as a medicament, they are to be regarded as foods. Neither form of sugar produces any nervous disturbance, and to this extent is preferable to caffeine. Further, Dr. Meilach claims that the diuresis resulting from these substances is greater than the amount of liquid drank, therefore that they produce a dehydration of the blood, and to that extent render it more apt of resorption. The author has found that the diuresis reaches its maximum in dropsies of cardiac, or even of cardio-vascular origin, when the urine is free from albumen. When the urine is albuminous, diuresis is produced, but not to so marked a degree as when albumen is absent. Lactose, in doses of a little over 3 ounces, dissolved in two quarts of water, produced marked diuresis, while 6 ounces of a seventy-five per cent. syrup of glucose will produce the maximum effect.

The author believes that the efficacy of the grape-cure is largely attributable to the diuretic effects of the glucose contained in the grape.

In *Les Nouveaux Remèdes* for January 8, 1890, reference is made to a case reported by ZAVADSKY, which fully confirms the researches made originally by Sée and Dujardin-Beaumetz, and extended still further by Meilach, as to the diuretic properties of lactose. The case was that of a man, with fatty heart, with arterial sclerosis and ascites. Digitalis had produced but slight result, while lactose, in doses of from 3 drachms to 4½ drachms daily, produced threefold increase in the quantity of urine secreted in twenty-four hours. The author especially calls attention to the diuretic action of milk-sugar, in doses of only one-fifth of the dose recommended by French observers, and, contrary to the assertions of Sée, calls attention to the fact that the simultaneous administration of milk or soup, or other liquid foods, does not interfere with the diuretic action of lactose. He even believes it is attributable to the milk, which contains a large quantity of milk-sugar, that he has obtained such marked results with such small doses of sugar.

THE SURGICAL TREATMENT OF HEPATIC ABSCESS.

In several recent numbers of the *British Medical Journal* M. RICKMAN J. GOOLEE has published several lectures on the "Surgical Aspect of Hepatic Abscess," the treatment of which he summarizes as follows (*British Medical Journal*, January 25, 1890):

1. Pyæmic abscesses do not call for surgi-

cal interference, or, if in rare cases one should point, it is only opened to relieve symptoms, but without hope of doing permanent good.

2. The same observations apply to abscesses resulting from suppurative phlebitis of the portal vein.

3. Multiple abscesses associated with dysentery or ulceration of the bowels are very unfavorable for surgical treatment. They must, however, be opened and treated on the same lines as the single or tropical abscess, because they cannot be certainly diagnosticated.

4. Single abscess of the liver, whether trophical or not, must, if it approach the surface, be opened, the following precautions being adopted:

(*a*) If it present at the epigastrium, the presence of adhesions must be ascertained before incising the liver.

(*b*) If through the chest wall, a spot must be chosen below the normal limit of the pleura; but, if by chance either pleura or peritoneum be opened, the opening must be closed with a double row of stitches before incising the liver.

(*c*) Strict antiseptic precautions must be throughout adopted, either carbolic acid or some slightly soluble salt of mercury being employed for the dressings.

(*d*) The tube must be of large size at first, and a tube of some sort must be kept in until the discharge is reduced to a very minute quantity.

If the abscess have burst into the lung, pleura, pericardium, peritoneum, or kidney, and the position of the abscess can be clearly determined, it must be opened without delay. If the position of an abscess be only suspected and the patient be losing ground, it is right to puncture the liver in the most likely situations, bearing in mind that, though usually quite harmless, a slight amount of risk accompanies this very trivial operation. This rule applies to cases in which the abscess has ruptured into any of the cavities enumerated above. If, on the other hand, whether the abscess have ruptured or not, there are no means of diagnosticating the whereabouts of the matter, and the patient be not losing or even gaining ground, the surgeon should hold his hand for a time.

5. Hydatids of the upper and back part of the liver are to be treated upon the same lines; but in cases of this sort, and in those of sub-diaphragmatic abscess, it must be remembered that the diaphragm may be pushed up to a very great height, thus closely simulating intrapleural suppuration.

6. Empyema, pericarditis, and peritonitis caused by rupture of an hepatic abscess or hydatid must be promptly dealt with on general principles.

COCAINE IN YELLOW FEVER.

Dr. James Thorington states in the *American Journal of the Medical Sciences* for January, 1890, that in an experience of seven years' active practice on the Isthmus of Panama, where cases of yellow fever were constantly under his observation, he has tried many kinds of treatment in yellow fever, such as—

Quinine, which he found did much more harm than good, except during convalescence.

Calomel, which did good only at the beginning of an attack, and much injury if used later.

Castor oil and orange-tea, as recommended by the physicians in Cuba, did good in some instances.

The pure juice of the lime, with small pieces of cracked ice, as recommended by physicians in the service of the Panama Canal Company, was found more satisfactory than any of the above methods of treatment.

The author tried also veratrum viride faithfully in several cases, but without success. In many of the cases Dr. Thorington found that good nursing, without medicinal treatment, saved the patients.

Dr. Thorington noted that in the majority of cases death was attributable to nausea and vomiting and not to suppression of the urine, and he concluded that if he could find some means of quieting this nausea the possibilities of recovery would be greatly increased. Cocaine, as an antiemetic, was suggested to him by Dr. Jennings, and he states that he has tried it in every case since, the results being most gratifying. Before he commenced using cocaine, he writes that he lost fifty per cent. of his yellow fever cases; but since then, he states, that he has treated twenty cases, and has had but three deaths, these three patients dying from suppression of urine. Dr. Thorington claims that when cocaine is used in the treatment of yellow fever, black vomit or vomiting is never a part of the disease, and suppression of urine is then the only symptom which need cause anxiety; and even here he states that he has in some

cases seen cocaine act as a diuretic. Before using cocaine he states that black vomit occurred in nearly all his cases, but now it never appears after the drug has been used, and rarely does it fail to check the vomiting and put the stomach at rest. To avoid vomiting, when the drug is administered, the author writes, he has noticed that it is better to give it in a solution on an empty stomach, as when administered immediately after taking nourishment it is apt to go beyond the stomach, or even be rejected if the patient vomits. This result is also very apt to happen if the cocaine is given in pill or tablet. Whenever the patient feels nausea returning, a dose of cocaine should be immediately given, even if a preceding dose had been given fifteen minutes before. Dr. Thorington has found it necessary to give as high as ½ to ⅔, or even 1, grain, every half hour, if the vomiting is not checked after the first or second dose of 10 minims of a four per cent. solution.

In summing up the value of cocaine in the treatment of yellow fever, the author states it to be almost a specific, in his experience doing more to cure yellow fever than any other drug he has ever tried, taking away or removing all nausea and vomiting, acting as a diuretic, and as an excellent and sure "heart-tonic and stimulant."

THE TREATMENT OF ERYSIPELAS BY SUBCUTANEOUS INJECTIONS OF CARBOLIC ACID.

In the *Bulletin Général de Thérapeutique* for January 15, 1890, reference is made to ten cases of erysipelas treated by Dr. P. Samter with subcutaneous injections of carbolic acid. The results of this treatment were in the author's cases so marked that he states that he believes he is warranted in positively stating that all forms of erysipelas may certainly be arrested by means of these subcutaneous injections. That the success, however, be complete, two conditions are indispensable. In the first place, the diagnosis must be positive; in the second place, it is necessary that the doses of carbolic acid injected should be sufficient. He even claims that when there is a swelling which possesses the appearance of erysipelas, which is not influenced by injections of carbolic acid, it may be positively concluded that the case is not one of true erysipelas. The author further claims that, in cases where the injections of carbolic acid are practised early, the erysipelas will be but rarely accompanied by the development of abscess or other complications. The solution which the author employed consists of 39 parts each of pure acid and absolute alcohol dissolved in 94 parts of distilled water. The injections are commenced in a healthy section, about half an inch from the border of the patch of erysipelas. The needle of the syringe is inserted obliquely, without lifting the skin, towards the affected part, and inserted just sufficiently deep that the injection penetrate the deeper layers of the skin. An entire syringeful should be injected slowly while making lateral movements of the needle. When the erysipelas is not located on the face, the pain occasioned by this injection is reduced to a slight sensation of burning. The different points of injection should be separated by spaces of about an inch or more, according to the quantity of carbolic acid injected at each point. In some instances he has injected at one sitting as much as 4 to 7 grains of pure carbolic acid. In order to avoid all danger of poisoning, the author recommends from the commencement of this treatment the administration of a tablespoonful of a solution containing 3 parts of the sulphate of sodium to 100. Ordinarily, he finds that the temperature is reduced to normal within twelve or twenty-four hours. When the erysipelas is located on the trunk, the injections of carbolic acid may generally be repeated several times, though it is only in the earliest stages of the disease that 150 to 225 minims will be sufficient to arrest the development of the morbid process. If the erysipelas extends over a wide surface, it is only possible to perform the injections on one edge of the diseased surface at a time, and then gradually to extend the line of injections, so that each series shall be separated by twelve or twenty-four hours. In cases of erysipelas of the face or of the scalp, this mode of treatment offers greater difficulties, as in these localities the subcutaneous injections are more painful, and besides are much more liable to lead to the development of more or less extensive abscesses. Nevertheless, in spite of the disadvantages of these conditions, the author states that he would not hesitate to employ injections of carbolic acid in erysipelas of the face or scalp when the disease becomes at all alarming.

OXYTOCIC ACTION OF QUININE.

The power possessed by quinine of exciting uterine contraction has been generally admitted, but authors differ widely as to the extent to which it possesses this property. Some claim that its abortifacient action is exerted only during the early months of pregnancy, others only towards its close. It has been asserted to exert a selective action upon the fibres of the body of the uterus, to the exclusion of the cervix, while others claim that it is most active in promoting dilatation.

On the other hand, the number and creditability of the authors who deny absolutely that quinine has any property of stimulating uterine muscular fibres quite equals those who maintain the contrary. Some experiments reported by DR. I. E. ATKINSON in the *American Journal of the American Sciences* for January, 1890, throw some light upon this vexed question. Dr. Atkinson refers to two experiments made by Rancillia on pregnant dogs, in which the administration of quinine produced delivery, and one made by Magnin in which quinine produced abortion in a pregnant rabbit. Though it must be confessed that other experimenters have failed to produce abortion through the administration of quinine, and, in fact, in some cases have administered enough "to produce death without disturbing the products of conception." Dr. Atkinson has collated twelve cases, published by various authors, in which the administration of quinine led to the production of uterine contractions, and one case, occurring under his own experience, in which quinine was administered in 5-grain doses every four hours to a woman in the eighth month of her first pregnancy, who was attacked with quotidian intermittent fever. On the first day the remedy was given too late to interfere with the chill, which occurred on the second day; during this day twenty-five grains of quinine were administered again, and on the subsequent day there was no paroxysm, but on that day the patient stated that she had been feeling transient pains in her back since the early morning, these increased during the evening and night, and on the next day she was delivered of a live child, which seemed considerably smaller than an infant born at term.

No reliable conclusion can, however, be drawn from these cases reported, for the action of the remedy is liable to be confounded with that of the disease upon the organism; but there is no difficulty in determining that the action of quinine upon the uterus, even if it exist, is inconstant. Quite a number of writers have shown that quinine not unfrequently prevents abortion by its power of counteracting abortifacient morbid action. It is significant that many of those who deny that quinine ever acts as an oxytocic, freely admit that malaria itself may provoke uterine contractions and interrupt pregnancy. It is extremely improbable that any malarial patients escape the ingestion of quinine, unless by accident, and it is thus that a certain number of the cases supposed to illustrate the abortifacient tendencies of malarial intoxication may, in fact, present examples of idiosyncratic reaction to the presence of quinine in the system. The latter possibility, supported by the observations of the large number of writers already quoted, certainly justifies the demand for renewed attention to the subject.

In conclusion, the following propositions are submitted by the author:

1. The cinchona preparations have not a fixed and definite influence in causing contractions of the uterus.

2. An oxytocic action is occasionally produced by these remedies. This action depends upon idiosyncrasy; and, as in the other idiosyncratic reactions to cinchona, it is impossible to foretell, in any given subject, its manifestation.

3. There is some evidence that this action is only exerted under large doses or in debilitated subjects.

4. Cinchona and its derivatives should be employed during pregnancy with great circumspection, and should be at once withheld upon the supervention of symptoms indicating a uterine-motor influence.

THE SYMPTOMS AND CONDITIONS WHICH JUSTIFY NEPHRO-LITHOTOMY.

At the Newport meeting of the South Wales Branch of the British Medical Association, MR. W. H. A. JACOBSON read a long paper as to the symptoms and conditions which justify nephro-lithotomy, the chief condition simulating renal calculus, and some practical points in the operation of nephro-lithotomy (*British Medical Journal*, January 18, 1890).

He first calls attention to the following symptoms and conditions which justify nephro-lithotomy. These are: 1, continued hæmaturia, or passage of blood and pus; 2,

pain or tenderness in the loin or elsewhere; 3, points connected with the previous history, for example, family history, habitat, habits, lithiasis, oxaluria, passage of previous stones, renal colic; 4, frequency of micturition; 5, absence of any condition in the rest of the urino-genital tract to explain the symptoms; 6, failure of previous treatment.

As regards the conditions which simulate renal calculus, Mr. Jacobson qualifies them as follows. These are: 1, lithiasis, and, to a less degree, oxaluria; 2, tubercular kidney; 3, pyelitis, not tubercular; 4, movable and (5) aching kidney, especially if associated with (6) neuralgic conditions; 7, disease in organs contiguous to the kidney; 8, disease of lumbar spine; 9, interstitial shrinking nephritis; 10, malignant disease of the kidney, especially of its pelvis and malignant disease around last dorsal nerve.

Finally, the author alludes to the following points, which deserve particular attention in the performance of nephro-lithotomy:

1. To count the ribs. That this is not an unimportant detail is proved by the fact that PROFESSOR DUMREICHER, of Vienna, accidentally opened the pleural cavity in an attempt to remove a pyelo-nephrotic calculus kidney. Post-mortem: the last rib was found to be rudimentary, and the pleura projected a good deal below the lower edge of the eleventh rib.

2. To make a sufficiently free incision, especially in a stout patient, and a deep loin. Additional room may be gained by converting the usual lumbar incision into a T-shaped one, or by making use of Konig's incision, in which the muscles are cut through as far as the recuts, and the peritoneum pushed forward. A small stone in a kidney will always be liable to be overlooked, but a surgeon does not give his patient or himself a fair chance who is content with exposing the kidney through a limited incision, and then trusting to punctures with a needle.

3. To pack away with sponges the colon, which is often troublesomely distended with flatus in these cases.

4. If the stone cannot be felt either in the pelvis or after palpation of the posterior and anterior surfaces of the kidney, this should be drawn up and out of the wound as far as possible, and again examined, a careful watch being kept upon the pulse.

5. In puncturing the kidney, to try, as far as possible, to open the calyces systematically.

6. If palpation and acupuncture fail to find a stone, the kidney should be carefully opened and sounded.

7. Hemorrhage from an incision into the kidney is certainly arrested by firm, careful plugging with strips of sal alembroth gauze. It is said that this plugging may cause vomiting. This did not occur in any of my cases. It ceases on the removal of the plugs. Care must be taken that the plugging is thoroughly done. If inadequate, it will have to be repeated in a few hours,—perhaps more than once,—thus leading to exhaustion and setting up cellulitis, which may of itself be fatal, owing to the important relations of the kidney.

8. Sources of difficulty in removing the stone. The chief of these are: (1) A very mobile kidney, which gets away deep in the wound; (2) a stone situated on the anterior surface and near the entrance of the vessels; (3) a small stone in a sacculated kidney, the stone falling into one of the sacculi, and thus being hard to find.

9. Multiple calculus in a suppurating, damaged kidney. If the question of nephrectomy arise, this step should, as a rule, be deferred, and the kidney thoroughly drained, for (1) additional shock and loss of blood will be avoided. (2) The condition of the opposite kidney, very possibly calculus also, will be made clearer by waiting. (3) The bulk of the kidney will be lessened by drainage. (4) Though a source of discomfort (if an open sinus persist) it may still do some and important work.

10. If the kidney has been much disturbed it should be stitched *in situ*.

THE TREATMENT OF EPILEPSY.

In the *Journal de Médecine de Paris* for January 12, 1890, M. CORNET publishes the results of his experiments, made under the direction of M. Bourneville, as to the use of bromide of gold, bromide of camphor, and picrotoxine in the treatment of epilepsy. The bromide of gold appeared to have a certain favorable influence in certain epileptics, although this action was inferior to that of the bromide of potassium. No unfavorable result was, however, produced through the employment of ½ grain daily. The bromine of the bromide of gold is eliminated by the urine, where it is found a very short time after its ingestion, and disappears but slowly, the bromine appearing a short time after its ingestion and disappearing slowly, whereas the gold accumulates in the liver,

and only appears in the urine a long time after the commencement of the treatment. The bromide of camphor, whose action upon cataleptics is still disputed, according to this author, has a favorable action upon the attacks of vertigo in epileptics, the attacks diminishing in severity, and even leading to their entire disappearance. The bromide of camphor is also eliminated by the urine, the bromine in the state of bromide of sodium and the camphor in the form of derived products, resulting from its transformation in the organism. Picrotoxine produces, according to the author, a favorable influence upon attacks of epilepsy, when administered in doses of $\frac{1}{10}$ to $\frac{1}{12}$ of a grain.

THE ACTION OF SOLANIN AND SOLANIDIN.

Solanin is a basic glucoside which, under the action of dilute acids, splits up into solanidin and sugar. Since the identity of solanin from the various solanaceæ has not yet been positively determined, MAX PERLES, in an elaborate study to determine the action of solanin, employed solanin obtained from the potato. In its action upon lower organisms, such as amœba and infusoria, as well as ciliated epithelium, solanin proves itself to be an intense protoplasmic poison. The development of bacteria is prevented by solanin, in the concentration of less than one per cent. Mixed with blood, in small amounts, solanin accelerates coagulation of the blood, while in larger amounts, on the other hand, it prevents coagulation and produces decomposition of the blood. Defibrinated blood becomes lake-colored through the action of solanin, while the red blood-corpuscles are partly dissolved. The concentration necessary to produce this effect is very slight, 1 to 100 sufficing. When in contact for several hours with the blood, oxyhæmoglobin is converted into reduced hæmoglobin, but not into methæmoglobin. On cold-blooded animals solanin produces a distinct paralysis of the nervous system, progressing from the brain to the spinal cord, which leads finally to paralysis of the heart. In experiments made directly on the heart, the author found that the power of the heart-muscle was immediately reduced through the influence of solanin, while the pulse volume and pulse frequency were only gradually affected (*Centralblatt für Klinische Medizin*, No. 2, 1890). The toxic action of solanin on the heart is attributable to the solanin itself, and not to any secondary effect produced through action on the blood-corpuscles. In experiments in which serum was substituted for blood, in order to ascertain the action upon the heart, the results were still the same. Microscopic examination of the heart-muscle after the action of solanin showed that it was largely deprived of its transverse striation, while the primitive bundles were disintegrated and unelastic. Locally applied, solanin produces tissue destruction, so serving to explain the cause of the apparent anæsthesia produced. In direct application to nerve-trunks, the nerve is first irritated and then paralyzed, while the muscles, on the other hand, are directly paralyzed without any antecedent stage of irritation and lose their transverse striation. In warm-blooded animals, after careful, slow injection of solanin solutions directly into the blood, there is first violent tremor, and later clonic convulsions of the jaw, neck, and back-muscle, which may also be reflexly produced during the pauses of the convulsions. These symptoms of irritation are very rapidly followed by an increasing central paralysis, affecting especially the respiratory centre, while the peripheral nerves and muscles remain irritable up to death.

One of the characteristic symptoms of poisoning with solanin consists in the variation of temperature, and the thermometer enables us to form quite as accurate conclusions as to the degree and stage of poisoning as is the case in a fever. So even in non-fatal cases the lowest point in the temperature curve corresponds to the highest degree of the intensity of the poisoning, and recovery progresses uniformly with the increase of the temperature. Respiration is seriously interfered with and becomes highly dyspnœic, these symptoms partly being attributable to disturbance of the circulation and alterations in the blood. The digestive organs do not escape the action of solanin; vomiting is produced in dogs by the excretion of solanin into the stomach, and is apparently reflex. At the post-mortem examination, enteritis will nearly always be found, with isolated hemorrhages in different parts of the intestinal wall, similar to what may occur in typhoid fever. The kidneys are the seat of acute nephritis; infarcts are to be found in the renal tubules, thus leading to albuminuria and the appearance of tube-casts in the urine. Alterations in the organs of circulation, as evidenced in the decrease of irritability of the vaso-motor centre and of the power of the heart, only

occur shortly before death. Injections of solanin into the peritoneal cavity, through the violent irritation of the peritoneum, produce severe shock, from which the animal only recovers partially in half an hour at least. Autopsy will reveal hemorrhagic and exudative peritonitis. In subcutaneous injections the action of solanin upon the kidneys and intestine is almost invariably wanting, while the alteration of the blood is only present in a slight degree. In cases of fatal poisoning, with solanin administered subcutaneously, the principle symptoms are progressive, general paralysis, reduction of the temperature to 88.7° F., dyspnœa, and heart paralysis. The fatal dose, when administered by the stomach, amounts to 5 grains for every two pounds of body weight, death being produced in twelve hours. In smaller doses marked symptoms of poisoning are rarely met with. In dogs, when administered by the stomach, the emetic effect is the most marked, and, as a rule, prevents its being absorbed. If, however, it is absorbed, or if it is permitted to act directly upon the intestinal tube, violent acute inflammation of the mucous membrane and of the intestinal tube is produced, and profuse diarrhœa results.

Solanidin, which results from the action of acids upon the solanin, is also a blood-poison; central descending paralysis especially affecting the respiratory centre, then the ganglia of the heart and the heart-muscle, are the principal results which follow the subcutaneous injection of solanidin in cold-blooded animals, the only difference from the action of solanin being found in the fact that the paralysis develops somewhat slower. The local irritant effects of solanin are not exerted by solanidin, while solanidin, further, has but little action on the peripheral nerves and muscles. In warm-blooded animals a constant fall of temperature up to death is an invariable symptom in fatal poisoning with solanidin as with solanin. The nephritis is likewise provoked by solanidin, as is also the inflammation of the intestine. The principal difference between solanin and solanidin is found in the fact that the latter injected into the peritoneal cavity, or into the subcutaneous cellular tissue, or into wounds, produces no local symptoms of irritation. The above attributes of solanin and solanidin warrant their location in the group of the sapotoxines, such as quillaiaic acid, sapotoxine, senegin, cyclamin, etc.

Reviews.

A CONTRIBUTION TO THE SURGERY OF THE SPINAL CORD. By William Thorburn, B.S., B.Sc., M.D. (Lond.). With diagrams, illustrations, and tables. Philadelphia: Blakiston, Son & Co., 1012 Walnut Street.

In looking over this book the first thing that attracts the attention of the reviewer is the extraordinary frequency of injuries of the vertebral column in the service of the Manchester Infirmary. The two first lines of the book state that in four years twenty-one cases of injuries of the cervical spinal cord alone have been admitted to the institution. This remarkable opportunity has been well availed of by Dr. Thorburn, the result being a very valuable contribution to practical neurology.

The volume opens with a discussion of the distribution of the cervical nerves, chiefly founded upon the careful examinations of twenty-one cases. The conclusion differs very materially from that by Gowers in his "Diseases of the Nervous System," and also from the tables of Herringham. The diversity suggests that variety in the distribution of the cervical nerves is common, but further observations can alone settle this question.

The body of the work is divided into eight chapters, and, in order to give our readers as clear an idea as possible of the scope, we state the subjects of its chapters: 1, "Injuries to the Cervical Region of the Spinal Cord;" 2, "Injuries to the Cervical Region of the Spinal Cord" (continued); 3, "Injuries to the Dorsal Region of the Spinal Cord;" 4, "Injuries to the Cauda Equina;" 5, "Injuries to the Lumbo-Sacral Region of the Spinal Cord;" 6, "The Indications for Operative Treatment in Affections of the Spinal Cord;" 7, "Ophthalmoscopic Changes in Injuries of the Spinal Cord and in Traumatic Neuroses;" 8, "Traumatic Hysteria, especially in Relation to Railway Accidents."

In regard to operations upon the spinal cord, Dr. Thorburn very properly calls the attention to the fact that if the cord is ever severed by an injury, the result is not a clean cut of its structure, but a crush, and that it is hopeless to expect that a crushed cord can recover itself. His experience has led him to conclude that the operation of trephining the spine for traumatic lesions, as compared with the condition which it is intended to relieve, does not present any very great dangers, and appears unlikely to increase the gravity of the prognosis, but that as both *a priori* argument and the results of published cases show that

it is unlikely to be of service, it should be abandoned, except in cases of injury to the cauda equina, and that in the latter, on the other hand, it will probably prove to be an eminently justifiable and serviceable procedure.

One of the most interesting chapters in the book is that on traumatic hysteria,—a chapter which is practically a discussion of the results produced by railroad accidents and other similar catastrophes. In discussing this subject, it seems to us, that Dr. Thorburn is not always as clear as in other portions of the book. The term "concussion of the spine" is certainly very frequently misused by authors, but we have no doubt but that there is concussion of the spine, and that it is an essentially different state from traumatic hysteria, neurasthenia, meningitis, myelitis, or any other recognized affection. Dr. Thorburn says that the classical concussion of the brain is a well-understood affection, representing almost certainly a definite organic pathology,—viz., intracerebral hemorrhages. We do not believe that intracerebral hemorrhage occurs in ordinary concussions of the brain; it seems to us absurd to suppose that an unconsciousness which lasts for perhaps five minutes, perhaps five or ten hours, and which is recovered from at once without the remnant of any mental or physical disorder, depends upon so serious a lesion as intracerebral hemorrhage. The pathology of brain concussion is simply suspension of brain action by shock, and, if the cells recover their functional activity, they go on in their usual course, unless there has been some intracerebral hemorrhage or other organic change. Blows upon the spine will sometimes momentarily arrest the functions of the cord, recovery occurring precisely as when the function of the brain has been arrested by violence. The term "concussion of the cord" should be restricted to such cases. Any case of disordered innervation following violence, in which the symptoms have continued till long after the first shock, or perhaps have not at first appeared at all, is not one of simple concussion of the spinal cord. It is, perhaps, the frequent misuse of the name by its application to chronic states which has led Dr. Thorburn into denying the existence of concussion of the cord.

The post-traumatic functional neuroses Dr. Thorburn has arranged as follows:

1. Acute effects.

a. General nervous depression,—"shock" or "collapse."

b. A more localized and defined disturbance of cerebral (cortical) origin,—"chronic hysteria."

This classification is correct, as far as it goes, but does not include the very common cases, in which not merely functional but absolute organic change occurs. Traumatic myelitis and traumatic meninges myelitis exist as well as the traumatic functional neuroses; often, indeed, the great practical difficulty in these cases is to decide whether the symptoms are dependent upon organic change or not.

Acute hysteria developed from railway or similar accidents offers nothing etiologically remarkable. The fright of such an occurrence is sufficient to upset any but the most stable nervous system. The existence of traumatic hysteria is, perhaps, not so universally recognized, but, as Charcot long ago insisted, the affection is not extraordinarily rare, and is often severe and difficult of treatment.

Space is wanting to follow our author further in his discussion of the various questions connected with surgery of the spinal cord, and we must conclude our notice by recommending very strongly to our readers this book as an excellent, clear, concise monograph, having for its underlying foundation a thorough-going knowledge of the subject, as quarried out by the author from his own experience and from the records of other writers.

A Text-Book of Mental Diseases, with Special Reference to the Pathological Aspects of Insanity. By W. Bevan Lewis, L.R.C.P.
Philadelphia: P. Blakiston, Son & Co., 1890.

The volume which has been given by Dr. Lewis to the profession is essentially different in its arrangement and scope from any of the treatises in the English language with which we are familiar; indeed, its individuality is so marked as to isolate it among the books of all tongues. It is divided into three great sections, or, as the author terms them, parts. The first is the anatomical and histological section, comprising one hundred and fourteen pages; the second, the clinical section, of about three hundred pages; the third, the pathological section, of one hundred and eighteen pages.

The opinion which a reviewer will arrive at concerning the volume will depend upon the point of view from which he looks at it. The title-page of the work calls it "text-book;" the preface, "a new treatise." As a text-book, we cannot think the work is a success;

as "a new treatise," to be carefully read, and, as far as possible, understood and digested by one who knows already more or less concerning insanity, the work is of value.

We have often before expressed a disapprobation of clinical text-books in which a large proportion of the pages are occupied with something else than clinical medicine. The student should get his anatomy from an anatomical text-book, his clinical medicine from a clinical text-book, and should not be allowed to use a clinical text-book until he has worked up his anatomy. The first part of the work of Dr. Lewis is a valuable *résumé* of the latest studies of the anatomy of the nervous system, and has much, in the microscopical portion of it, that is distinctly fresh, and gives evidence of continuous practical work with the microscope. These chapters, we may say, are excellent for the practitioner who wishes to refresh his memory.

In the clinical part of the work Dr. Lewis seems to be distinctly in advance of most alienists, in that he considers the various so-called insanities not as diseases, but as symptoms or symptom groups to be studied with the hope that some time we may understand their relation with pathological states. As he is very metaphysical, or, perhaps, we had better say, psychological, in his methods of study of the various mental states, and as there is nothing very recent upon medical psychology in the English language available to the ordinary student, it would have been much better if the anatomical portion of the book had been replaced by chapters of physiological psychology. Certainly such chapters would have made much more easy the understanding of the clinical text. We opine that the medical student, or, at least, the average of even the best class of American medical students, will rend his clothes, and bedeck himself in sackcloth and ashes, refusing to be comforted, if required to be examined upon a book which commences its clinical studies by stating, "simple pathological depression is ushered in by that *failure in object-consciousness* which invariably inaugurates a corresponding *rise in subject-consciousness;* and which, we have reason to infer, implies a diminished functional activity in those realms of the cerebrum correlated thereto;" and continues by affirming, "the ego may exist as a *double personality*, each independent of the other, or the one swayed by the other, and utterly dissentient in their nature. We need not here deal with these minor differences, but rather consider the development of the latter class, where the identity is transformed and the non-ego is estimated in terms of the malign." We have read some psychology, and have even ventured to dip our pen in psychological ink, but what is meant by the "non-ego being estimated in terms of the malign" we can only guess, and for fear that after our jump we might not alight upon our feet, we will refrain from exercising the Yankee's privilege.

The psychological method of the study of insanity involves hard thinking, and, almost of necessity, some obscurity, because it involves penetration into a cloud-land of doubt and uncertainty. Some of the difficulties of the book for the reader are, therefore, inseparably adherent to the method, but more careful writing, and especially more careful use of prepositions and adjectives, would improve the text. As an instance we quote the following paragraph:

"We frequently observe, both in epilepsy and general paralysis, instances of suddenly-assumed stupor, both of long continuance and not necessarily preceded by any obvious motor discharge or convulsion. Undoubtedly, in these cases, there has been discharge *of unstable gray matter from sensorial realms of the cortex*" (the italics are our own).

A discharge of unstable gray matter from sensorial realms would soon lay waste such realms of the cortex, and certainly would require an opening in the skull or some other channel, through which the gray matter could escape. We suppose our author means discharge *by* unstable gray matter *in* the sensorial realms.

Dr. Lewis certainly should remember that the great object of all style is to make the writing so clear that no conscious effort shall be required of the reader. Labor by the author must save the labor by the reader, and the author in the present days of literary competition, who will not do the labor, can scarcely expect to reap the reward of being widely read.

In conclusion, we desire to reiterate our belief that the treatise written by Dr. Lewis is thoughtful and suggestive, challenging the attention of all of the higher class of alienists. Of course we do not agree with all of his statements or views, but although much is difficult to understand, and possibly scarcely to be understood by the ordinary doctor, we know of no recent work in the language upon the subject which is more instructive and more worthy of attention, provided it be taken in not too large doses at one time

Correspondence.

PARIS.

(From our Special Correspondent.)

Influenza, Statistics and Contagiousness—Official Antiseptics for Midwives—Persistent Virulence of Consumptive Sputa—Better Pay for Expert Work—Poisoning by Crystallized Aconitine; Proper Dose of the Alkaloid—Business Value of Drunkards.

Now that the influenza is over, as is shown by Dr. Bertillon's official statistics, it is time to count up the dead. The epidemic is estimated to have caused here about five thousand deaths, or nearly as many as usually occur during five weeks of the season, and the plague did not last much longer. Such a death-rate is certainly very high. On the other hand, the rate is now running below the average, which our statistician doctor thinks is owing to the fact that the disease, having hastened the exit of a number of weak persons, many died then who would otherwise be dropping off now and for some time to come. But if the epidemic is over, scientific memoirs on it, and especially microscopic discoveries, are coming in thick and fast. Microbes, bacilli, micrococci, pneumococci, diplococci, streptococci, and even hæmatozoa of the influenza are disclosed every day by scientists at home as well as in England, Germany, Italy, and other parts of Europe. America, being the last to catch the disease, has not been heard of yet, but no doubt soon will be. It never rains but it pours. To part the wheat from the chaff is at present no easy matter, and, without intending any disrespect to the learned investigators, perhaps it is wisest, amid such confusion, to wait until things have taken a clearer shape. And among the copious literature of influenza only one fact, or rather incident, will be mentioned here, because it is one to be rarely observed. According to the official report of Dr. d'Hoste, of the transatlantic steamer "Saint-Germain," the ship sailed on December 2, 1889, from St. Nazaire for Vera Cruz. All on board were well, influenza not having yet reached that part of France. On December 5 the steamer called at Santander for passengers, and there received, among others, a man coming from Madrid, where the epidemic was raging. The passenger, who was well when admitted, fell sick the next day, and soon the contagion spread on board, Dr. d'Hoste being the first to be influenzed. Out of four hundred and thirty-six passengers, one hundred and fifty-four were sick, with forty-seven of the crew and officers besides. Most of the cases were slight and a few dangerous, but no deaths resulted. From this unique observation the conclusion may clearly be drawn that influenza is a contagious disease, communicable not only through its complications and sequelæ, but by itself before any secondary effects have developed. Such was the opinion expressed before the Academy of Medicine by Dr. Proust, a professor at the Faculty.

Corrosive sublimate as an antiseptic has won a glorious victory,—that is, if official decisions have any weight in scientific matters. It occurred as follows: The absolute necessity of antisepsis in obstetrics is now a well established fact, both in hospitals and civil practice. Unfortunately, most antiseptics are poisonous in improper doses, and the French poison law is very strict, as pharmacists know to their cost. No one wishes to repeal a law which is very beneficial in itself, since there are in France fewer poisoning cases in a year than during a week in England, where familiarity with poisons has bred contempt. But it is now found desirable to relax the law, so as to enable midwives to readily procure antiseptics which pharmacists are forbidden dispensing without a physician's prescription. Before having a presidential order issued modifying the poison regulations, the Minister of the Interior has consulted the Academy of Medicine on the propriety of the change, and asked its advice as to the best way to effect it. The learned body at once agreed on the advisability of granting midwives more facilities. But when it came to the choice of antiseptic or antiseptics, a long debate ensued, lasting over several sittings, although the subject had been well elaborated by a committee. As regards the nature of the substance, the battle raged over the whole list of antiseptics, and the question whether one or more should be authorized; as to the preparation thereof, the fight was between solutions, powders, and tablets. Not to go over the whole ground, suffice it to say that it was decided only one antiseptic should be recommended,—namely, corrosive sublimate—and the shape of a powder was preferred as being more convenient than a liquid, and less dangerous than tablets, which children might take for candy. Finally, it was agreed that pharmacists should be authorized to deliver to graduated midwives, on their own written order, the following composition:

Corrosive sublimate, 25 centigrammes;
Tartaric acid, 1 gramme;
Coloring, sufficient. Mix.
one powder. Affix an orange-yellow label bear-
e following directions:
limate, 25 centigrammes; for one litre of water.
.

o translate into more familiar weights and
ures, the powder is to consist of four
s of sublimate and sixteen grains of tar-
acid, and to be dissolved in thirty-five
unces of water. The nature and quan-
of coloring have not yet been agreed
. The committee first proposed Bor-
x red, but this was set aside as too dan-
ously similar to claret wine. Another dye
be selected at next meeting, probably an
ne blue, as has been adopted in Belgium
he same purpose. The addition of tar-
acid is intended, not only to give bulk
a distinct taste, but to insure the ready
ility of mercuric chloride. The Academy
recommended also that pharmacists be
orized to dispense to midwives vaseline,
one per mille of corrosive sublimate, in
ities of one ounce at a time.

he persistent virulence of consumptive
is an important fact which should al-
be kept in mind. Koch, and Tap-
er before him, have shown that the
is bacilli are not killed by the drying
he sputa. But Drs. Malassez and Vignal
carried the experiment further, to show
microbe's tenacity of life. In order to
te closely the conditions of ordinary life,
have taken phthisic sputa, dried and
dered them, then moistened them again,
repeated several times the same series
operations, just as is likely to happen nat-
y to spittles dropped on the floor or the
alk, and found, by actual comparison,
bacilli to be almost as numerous and vir-
t as the first day. These observations
rm the importance, admitted by most
enists, of guarding healthy people against
dejections of phthisics, and devising some
tical means to destroy the germs effect-
y.

he strike of the Rodez physicians, al-
ed to in the February number, page 65,
ing been imitated by doctors in another
ity, the Minister of Justice found him-
compelled to take some immediate ac-
, pending a Parliamentary determination
the matter. Physicians are justly indig-
at the grotesque compensation for medi-
xpert services allowed by fatly-salaried
officers, and, thinking these well-fed in-
dividuals could very well act more fairly on their own authority, have resolved to stand imposition no longer, and not to wait for the proverbially slow action of parliamentary bodies. This was the proper way to act and the only one to obtain justice from lawyers, who cannot possibly proceed without medical experts in many criminal cases. Consequently, Minister Thévenet has sent a circular letter to all his "procureurs généraux" (district attorneys), directing them to at once confer with the medical associations of their districts as to the proper compensation for expert work. The local associations have in their turn referred the matter to the national association, and, although the medical body rather mistrusts the legal fraternity, it is probable the difficulty will soon be satisfactorily adjusted.

A fatal poisoning accident from aconitine, which recently occurred in Antwerp, has once more forcibly called the attention of the profession to the danger resulting from the practice of selling, under the same name, so-called alkaloids, differing in strength from the pure chemicals. An Antwerp pharmacist received and dispensed the following prescription:

Crystallized aconitine, ¼ milligramme (1/170 gr.);
Sulphate of quinine, 15 centigrammes (1½ gr.).
For one pill. Send 10 such pills. Dose, 5 a day.

The patient, a lady, was taken so sick after the third dose that she would not have another. Her uncle, a man aged 60, to show her there was no danger, swallowed at once two of the pills. Soon after he was taken with convulsions, and an hour later was dead. The victims being of some standing in society, the town was greatly exercised over the sad event. Whereupon, the Antwerp Pharmaceutical Society sent a circular letter to every member of the medical and pharmaceutical professions, saying, in substance, that "the increasing use of alkaloids in therapeutics prompts us to call the attention of physicians and pharmacists to the varying strength of the substances sold under that name by various makers. According to law the pharmacist is bound to dispense the preparations officinal in the Belgian Codex, in the present case, amorphous aconitine. Of late, pharmaceutical chemistry has wonderfully progressed, and special laboratories supply some alkaloids, such as aconitine, eserine, digitaline, gelsemine, etc., in such a state of purity, and, in consequence, so active, that it is important the practitioner should be well posted as to

the comparative strength of amorphous and crystallized alkaloids. From a paper just published by Professor Plugge, of Groningen, on aconitine nitrate it appears that the nitrate prepared by M. Petit, of Paris, is at least eight times as active as that made by Merck, of Darmstadt, and one hundred and seventy times as powerful as that of Trommsdorf, of Erfurt. We know, besides, that the crystallized alkaloids prepared by Duquesnel are considerably more potent than those of German origin. Hence, to avoid mistakes and confusion, physicians are respectfully requested to clearly state in their prescriptions whether they mean the amorphous or the crystallized alkaloid, and pharmacists are cautioned against the dangerous difference in the strength of the two." To this very wise advice it may be here added that about two years ago the Paris Society of Pharmacy, of which M. Petit is a member, found it necessary to issue a similar warning. Several accidents, none fatal though, having been caused by one-fourth of a milligramme doses of aconitine, the society published a notice that *one-tenth of a milligramme* is the regular beginning dose for both crystallized aconitine and crystallized digitaline. But, to come back to the Antwerp case, the blame apparently lies on the pharmacists, because it was his duty to know that one-fourth of a milligramme is too much for a dose, and to refuse to dispense the prescription as it was, even if the physician had specified crystallized aconitine. On the other hand, the doctor may not be held quite blameless. At all events, the case must have been considered doubtful, as the crown did not prosecute. Now, to take a broader view of the question, which should physicians prescribe in preference, amorphous or crystallized chemicals? Of course, the crystallized. Their extreme potency is unimportant as long as we know the dose. The important point is that they are pure and not apt to vary like amorphous compounds. Only let all remember that the dose of crystallized aconitine and crystallized digitaline is one-tenth of a milligramme, or one-six-hundredth of a grain.

Beef extract as an article of diet is here reasonably popular, but as a temperance drink it has turned out a complete failure. Some time since a well-known English firm, which shall remain nameless, established a branch house in Paris for its extract of beef, and spent considerable money for advertising. But the other day the manager confessed they were sadly disappointed. The native competition they could st the exclusion of some of their preparat as violating the pharmacy law, they did mind; but the absence of drunkenness the beef-tea business. Here every o man, woman, and child—will take his claret, and never get drunk. Conseque there are no temperance societies, as in land, with coffee palaces where they disp hot beef-tea and other teetotallers' bever and thus dealers in extract of beef find th selves deprived of their best customers.

PARIS, February 19, 1890.

BERLIN.

(From an Occasional Correspondent.)

The International Congress—Virchow before a St Corona—The Code and its Victims—Prof Becker's Death—Bergman's Plastic Operatio Rare Case.

The Berlin Congress Committee is hard work. Dr. Lassar, general secretary, asked your correspondent to make the cial *honneurs* to the American and Eng guests. I was also asked to name the distinguished gentlemen of the Ameri profession, as special honors are to be c ferred upon them. I understand that i likely that his majesty, the emperor, will cord a reception to them. The number American visitors is expected to be v large, and every possible inducement will held out for them. Fares on both Ameri and German railroads will be materially duced for that occasion, and the North G man Lloyd and the Hamburg steamship li have volunteered most extraordinary red tions. To be sure, comfortable quarters be secured for you in advance. A great d ficulty, however, has arisen in the questi where the meetings of the Congress co conveniently be held, as there is in reality hall in the German metropolis sufficien capacious for the occasion. The special s tions could easily be accommodated in t various departments of the university. It most likely that the Renz Circus will be sorted to for the general meetings, though, is to be sincerely hoped, that this selecti will not prove a bad omen. It is a gra fying fact that the imperial government tak great interest in the Congress, and is willi to assign a large sum of money for the pu pose. The medical faculty has concluded publish a Berlin medical guide for the o sion, containing the history and accom

ts of the numerous medical institutions Berlin. The guide will be translated English for the benefit of the Anglo-erican visitors by your correspondent. Berlin Medical Society and the Verein innere Medicin will arrange a magnifi- banquet and summer-night's festival in Exhibition Park. An exhibition of chem- and surgical instruments and appliances be one of the features of the Congress. and Virchow, besides, will show you richest selection of histological, patho- cal, and bacteriological specimens ever duced.

Virchow is, no doubt, the most versatile in the Fatherland. He is the busiest of in's medical teachers, an indefatigable ex- er with microscope and dissecting-knife, ady contributor to medical literature, an e and eloquent member of the city coun- and last, but not least, one of the most getic politicians of the empire. How the essor finds time to eat, sleep, and to re- e, besides, almost daily American students iring about his courses is a perfect mys- . Being one of the Reichstag candidates Liberal party put up for Berlin, Virchow tedly spoke recently before crowded ences. Only two days ago I heard the uent professor address what was probably queerest audience a medical teacher had to deal with. The corona contained erous Socialists evidently bent on mis- f. But the catching eloquence of the aker, his dissecting and demonstrative ar- ents, his sublime power and pathos, com- ely mastered and subdued the crowd. A mosthenes could not have been more suc- ful in rendering an obstreperous crowd e and subservient. And yet, as yester- 's election proved, Virchow, the *lumen terrarum*, the standard-bearer of light, ty, and culture, could not overcome the ialist Janiszewski, the book-binder, who scarcely read or write German. Does it in reality appear like a fight of light inst darkness, of intelligence against igno- ce? What a disgraceful testimony for the ghtened German metropolis!

The enlightenment of the German race, ticularly of its academical classes, receives ther doubtful illustration by the numerous ms the observation of the "code" con- tly exacts. The medical students in ticular do the most and bloodiest fighting. se whose exalted calling it should be only eal wounds are foremost in causing them.

days ago two "mediciner" stood each other face to face on the "paukboden," as a fencing-room is termed in academical language. By an unintentional foul thrust of the rapier (foil), the left shoulder of one of the fencing-parties was pierced down to the bone. The bone itself was fractured, and the arm immediately fell down powerless. The limb, as was later on ascertained, was made useless for life. Possibly the telegraph has informed you of the affair that happened last week at the Freiburg University, where Eduard Salomon, a medical candidate, was killed in a three-pace distance pistol-duel. An American student at Berlin, too, tried his hand at it recently. In this case, however, there was a woman at the bottom of the duel,—viz., the boarding-house daughter where the young New York physician and his antagonist resided. The American shot the other party, a German medical student, in the left thigh. The university authorities and the government are solely to blame that this barbarous and mediæval appendage still flourishes in the German colleges. Of three students you meet Unter den Linden, two, at least, present their imaginary marks of honor on their slashed faces.

Death, the old reaper, is very busy just now among German medical celebrities. Professor Otto Becker, the famous Heidelberg ophthalmologist, has descended to the Plutonian shores soon after Volkmann, Troeltsch, and Westphal. Becker occupies in ophthalmological science an honored place alongside of Donders, Graefe, Arlt, and Helmholz. He was a pupil of Graefe and Arlt, and occupied the chair at Heidelberg for twenty-two years. His best known works are: "The Anomalies of Accommodation and Refraction," "The Visible Circulatory Movements in the Retina," "Pathology and Therapeutics of the Lens System," "Atlas of the Pathological Topography of the Eye," and "Congenital Total Color-Blindness." He had attained an age of sixty-two years.

Bergmann has again accomplished an exceptional feat of extensive plastic surgery. The case was that of a young lady, presenting a dark brown mole covering the entire right half of the face, the largest portion of the forehead, extended to the nose, chin, and eyelids, allowing but of a limited opening of the eye. The mole, aside from its huge extent, covered with hair, naturally produced a terrible disfigurement of the face, which was photographed before the operation. Bergmann operated in accordance with the plan laid out by Reverdin, of Geneva. The en-

tire mole was cut out, and the loss of substance made up by numerous small and thin flaps taken from the cutis of the patient's arm. The operation was an entire success, though the new facial integument still shows a net-work of curly lines. At all events, though the young lady will probably be unable to compete in the next beauty show, she has been transformed into a Venus when compared with her prior appearance.

I cannot conclude the letter without reporting the latest "rare case" of the Charité to you. Professor Leyden presented to the class a young lady affected with "schmerzfreude." It is a pity that I cannot translate that name for you, for "pain-joy" would convey no meaning to you. The patient, as the professor explained, belonged to that class of hysterical women who not only experienced no pain during an operation, but, on the contrary, had a morbid desire to have otherwise most painful operations performed on them WITHOUT AN ANÆSTHETIC. The patient in question had, during a paroxysm of hysteria, fractured her lower jaw and injured the facial artery. The injury proved a most serious one, and necessitated the ligation of the facial and carotid arteries, and, finally, the removal of part of the lower jaw. The patient insisted in having all three operations performed without an anæsthetic, and told the operator that she had derived great pleasure from the operation. *Nil admirari* says Horace.

BERLIN.

(From our Special Correspondent.)

The medical world in Berlin still remains under the ban of the influence of the influenza epidemic, which has now completed its journey from Russia over the whole of Europe, and extended across the ocean into America. The conferences held with regard to the disease at the great medical societies in Berlin concur in the opinion that the epidemic, which had appeared at first in such a benign form, had shown later in its course much severer symptoms. While at first it was regarded as an illness that would come to a favorable termination within three to four days, or within a week at the most, and that might merely set up disturbances in the digestive or respiratory organs, or in the general health for a time afterwards, later observations have shown that the affection has caused a great increase in the rate of mortality of those suffering from severe existing general disease.

The same is to be said of the pneum which appeared as a sequel and as a co cation of the influenza, and which led speedy death in many cases. The view pretty generally upheld that in these in mations of the lung the usual pneumoco would be found. Possibly there is an potent micro-organism present which is direct cause of the concurrence of the i enza and the pneumonia. The mortalit creased in a striking manner in the last w of December of the preceding year and i first weeks of January of this year, not in Berlin but in all the cities attacked by epidemic, a fact to be attributed chiefly t number of cases of disease of the respira organs, pneumonia in particular.

In order to gain a unity of opinion i gard to the course,—sequelæ, complicat method of treatment, and contagiousnes the influenza,—the committee on inves tion appointed by the Society for Cli Medicine had cards gotten up for distri tion among all the German physicians, notes of inquiry referring to these points. was hoped that the replies would give a insight into many phases of the disease yet fully understood. Notably has t been a difference of opinion as to wh the disease is of a miasmatic or contag nature.

The cases of those who had made i vidual observations, favoring the one or the other, exposed themselves in e instance to an attack from the opp stand-point, that would render these va less.

The result of the present investigation surely be looked forward to with much ea ness.

The Berlin medical faculty have rece met with a serious loss. Professor Ch Westphal, the professor of nervous dise and insanity, was released by death on uary 27 from his long and painful ner affection. Since he had already for a time been prevented from doing active w of any kind in consequence of his dis there was a dawning belief that hope m be entertained of seeing the noted lect and physician again in active duty at his post. His disease, unfortunately, was creasing in its progress, and carried away in his fifty-seventh year. His w will be carried on temporarily by his two assistants.

Some time ago there happened to be a legal trial here, which also claimed the interest of the medical circle in a considerable measure, in so far that the medical specialists were wholly opposed in the case in question. A woman held that she had been thrown down-stairs by a man. A fracture of the fifth cervical vertebra was reduced, in the case of the hysterical woman, by the physicians in attendance, the woman treated by extension bands, and cured. The counsel for the man made a telling defence before the court that the woman was led down the stairs, and so might have stumbled. While the first physicians held fast as to a fracture of the fifth cervical vertebra, the scientific deputation summoned to the medical aspect of the case, in unison with the specialists, gave an opposite opinion, declaring that the existence of a trauma could well be excluded, since the healing of a fracture in the column of the cervical vertebræ is very doubtful or rare ("who breaks his neck, must surely die"). But especially would a fracture in this case be doubtful, since the body of the fifth cervical vertebra cannot be felt by an examination through the mouth. The appearances presented by the woman could be derived from hysteria alone.

We have before us important alterations in the Berlin Hospital affairs. There will be opened in the course of this summer a special pavilion for diphtheritic children, as well as the polyklinic of the large, new children's hospital, which has been constructed at the instigation of the committee under the chairmanship of Professor Virchow, with the money raised by free donations. The laying out of the other wards—for measles, scarlet fever, and whooping-cough—will then follow, after a short time. This hospital, as well as the new City Hospital, which will also be completed within a few months, has been equipped according to the latest hygienic principles taught by medical science and experience. The medical department of the latter is under the direction of Professor Albert Fränkel, who has transferred it to the surgeon, Dr. Körte, a chemical assistant of the late Professor Wilms.

In the St. Hedwig's Hospital, which has been for years considered to be one of the best equipped hospitals in Berlin, the position of medical and surgical chief is now to be filled, an opportunity that also excites great interest among the medical fraternity. It is to be hoped that a subject will be revived, which has been most favorably discussed at head-quarters many times already, but the consideration of which has again come to a standstill. I refer to the plan of erecting hospitals for phthisical patients. Professor Leyden has just recently shown again the great importance of this subject. The enormous number of consumptives who exist in Berlin, and who formerly had to be treated in the general hospitals, would indicate that the time had arrived for constructing special hospitals for these patients. The reason offered is not so much that the disease should be isolated on account of its contagious character, since this would cause the hospitals to be regarded as "asylums for consumptives," but it is grounded on a medical and humane basis, since in general hospitals the provisions necessary for carrying out all the newest regulations of science for such diseases do not and cannot exist. Just as representatives of the medical profession have withdrawn from general practice in order to pursue special branches, so the future will show a division of the hospitals according to the special diseases. Our modern treatment of phthisis is founded on hygienic and dietetic principles. The latter includes the nourishment of the patient. The former was begun by the late Dr. Boehmer, of Görbersdorf. We know now that many of the theories, especially of a "zone free from phthisis," for a particular place, are untenable, and therefore the choice of an elevated position is of small importance; but, nevertheless, is there authority for demanding that each individual disease have its special hospital, even though it be granted that the treatment of phthisis in general hospitals can sometimes produce beautiful results. There cannot be much difficulty in finding a suitable place near Berlin to erect a hospital as described.

The deliberations and preparations for the Tenth Medical Congress, which takes place at Berlin in the beginning of August of this year, are progressing rapidly. The committee on organization are unceasing in their endeavors to make every provision for the proper reception of our many guests expected.

Berlin is fully equal to having the honor of welcoming within its walls the representatives of medical science from all parts of the globe, and the names of the members of the committee, as well as those of the chiefs and ushers in the separate departments, are security that the expectations which our foreign colleagues are given to entertain of the capital of the German empire will be fully real-

ized. Of especial importance to the American physicians will be the information that the committee has secured reduced rates of passage on the Hamburg-American Packet Company's line of steamers. We welcome this reduction in the expense attending the visit with much pleasure, as it must surely be a matter to be desired by our American colleagues.

DOSE OF FLUID EXTRACT OF GELSEMIUM.

To the Editor of the THERAPEUTIC GAZETTE:

DEAR SIR:—In regard to the dose of fluid extract of gelsemium sempervirens, of which there appears to be a considerable difference of opinion among some of the profession (see THERAPEUTIC GAZETTE, January, 1890), I would state that for the past twenty years I have been using this remedy largely, and find that 5 minims, repeated every three or four hours, will, in the majority of my cases, produce its characteristic effect,—confused or double vision,—after four or five doses have been taken, and that many patients cannot take more than 4 minims at intervals of three hours.

JOHN S. HUGHSON, M.D.

SUMTER, S. C.

Notes and Queries.

A NEW CONSTITUENT OF TEA.

In the *Zeitschrift für Physiologische Chemie* ROSSEL writes of a new base—theophylline—found by him in an alcoholic extract of tea sent him by Dr. F. Witte, of Rostock. The nated by crystallization. After various manipulations to remove other bodies, an ammogreater part of the caffeine had been eliminiacal solution of silver precipitated a double salt of theophylline and xanthine. The xanthine was removed by several hours' evaporation, which process, being continued, gave rise to brown needles of theophylline containing one molecule of water of crystallization and having the formula $C_7H_8N_4O_2$.

Theophylline is isomeric, but not identical, with theobromine and paraxanthine. Its crystals are colorless, thin, narrow, about five millimetres long, bounded by two flat surfaces, and by two that are variably rounded. The diagonal section is hexagonal. It melts at 264° C., crystallizes readily from a watery solution, and dissolves easily in warm water and in weak ammonia-water, but not so readily in cold as in hot alcohol. The crystallized chloride is obtained by evaporating with hydrochloric acid. The salts seem to be decomposed by water into their constituent parts of acid and base. If platinic chloride is added to a concentrated solution of theophylline chloride, quadrilateral crystals are formed. The double gold salt, as well as the double platinum salt, crystallizes in acicular forms, grouped in tufts in the former. This grouping is found in the very important compound formed with sodium. If theophylline is evaporated with nitric acid, a yellow body results, which becomes still yellower if ammonia is added, and not red, as is the case with xanthine. In the "Weidel reaction" with a solution of chlorine, with evaporation to dryness, a scarlet substance remains, which turns violet when treated with ammonia, and becomes colorless when treated with an excess of sodic hydrate.

These same reactions take place with theobromine. The analogy between theobromine and theophylline led Rossel to suppose that, as the former was a dimethylxanthine, and caffeine a trimethylxanthine, theophylline might have a similar constitution. The question was decided by treating the silver salt of theophylline with methyl iodide, with the addition of methyl alcohol, in a closed tube for twenty-four hours at 100° C. On cooling the tube, a coherent mass of silver iodide was found, bearing a voluminous crystallized substance. These crystals dissolved in hot methyl alcohol, and separated again on cooling. Analysis showed that the addition of a methyl group had taken place. The resulting body was identical in reactions with caffeine.

The position of the methyl group now remained to be determined. E. Fischer had proved that under the conjoint influence of potassic chlorate and hydrochloric acid, theobromine was decomposed into monomethylalloxan and monomethylurea, thus giving a methyl group to each resulting body. His method being employed, a substance was formed that was identical with amalic acid, an oxidation product of caffeine discovered by Rochleder. This is formed from caffeine by the same method as from theophylline, and is a reduction product of dimethylalloxan, being itself tetramethylalloxantin. Both methyl groups are thus contained in the alloxan radicle. Strecker, in his synthetic experiments on theobromine, discovered a substance isomeric with it, and Rossel supposes it to be identical with the one he has now described.—*New York Medical Journal*, February 8, 1890.

A RARE CASE OF IDIOSYNCRASY TO THE EXTERNAL USE OF TANNIN.

While the list of substances which in different individuals, whether internally or externally administered, are incapable of being tolerated is a very large one, tannin has as yet not been included in the list in which its external employment from idiosyncrasy is rendered impossible. In the *Deutsche Medicinische Wochenschrift*, January 24, 1890, however, DR. VICTOR LANGE reports the case of a man, 29 years of age, who consulted him on the 25th of April last for chronic nasal and pharyngeal catarrh. The history of the case was one of difficult respiration through the nose from early childhood, although the condition had recently become greatly aggravated, and there was a profuse secretion from the nose. Galvano-caustic treatment of the nose had a number of times been attempted, with transient improvement of condition. On examining the nose and the pharynx, the mucous membrane was found to be swollen and reddened, while the mucous membrane of the trachea was somewhat injected, although the vocal cords were normal. The pharynx was then painted with a solution of tannic acid, 1 part to 15. Immediately after the application there was great swelling of the mucous membrane, producing complete occlusion of the nose and a profuse watery secretion. On examination, there was great œdema of the soft palate and uvula, which hung down on the tongue, which condition was somewhat relieved by cold applications around the neck and ice given in small pieces internally. An hour later the patient returned, and complained of intolerable itching all over the entire body. It was found to be the seat of a general eruption of urticaria. On the next day this had disappeared, and the mucous membrane of the pharynx was now only a little swollen; but the uvula remained œdematous for a day or two. The patient reported that twice previously somewhat similar symptoms had followed the use of tannin,—once in the form of powder and another time in the form of a solution applied externally. Though it might be expected that in extremely susceptible cases a strong solution of tannin on a sensitive mucous membrane might produce sufficiently marked irritation to lead to the production of œdema, yet in this case the solution was by no means a strong one, and the action of the tannin was not confined to a local irritation, but produced general poisoning.

LACTATION DURING MENSTRUATION.

Ever since the days of Hippocrates and Galen, the belief has obtained that perfect lactation was inconsistent with the return of the menses. In a paper recently read before the Royal Medical Society of Vienna, by DR. SCHLICHTER, the result of this belief is seriously called in question, and there seems good reason to conclude that the effect of menstruation on the milk is not necessarily detrimental. The author obtained a number of samples of milk furnished by menstruating nurses and analyzed them with the result of showing that, as a matter of fact, the relative proportion of casein had undergone no diminution. The quantity of fat was variable, but the variations did not exceed those met with in non-menstruating lactifers, and the maximum occurred just as often during a menstrual period as after or before. On only one occasion did the proportion of the non-fatty constituents diminish to the extent of 1.5 per cent., and the proportion remained practically the same. He remarked that in the cow the advent of the rut does not produce any noteworthy variation in the quality of the milk. Taking the results of the analyses as a whole, it was found that the variations in the quality of the milk before, during, and after, menstruation were not as marked as in milk drawn at different hours of the day under ordinary circumstances. An examination of the infants, moreover, failed to demonstrate any constitutional disturbance or failure of nutrition provided the mensus did not return earlier than the sixth week. Although we are not prepared to endorse the very categoric conclusions of the author, it may be admitted that the occurrence of menstruation in nursing women is less hurtful than has generally been believed, but it is none the less a matter of clinical observation that their recurrence does diminish the quantity of the secretion, and may even cause it to cease at an earlier date. The supervention of pregnancy is under any circumstances a barrier to continued lactation, as much in the interest of the mother as in that of the child.—*Medical Press*, January 22, 1890.

ANTIPYRIN AND CHLORAL HYDRATE.

A few months since (*Pharm. Journ.*, July 27, p. 61) M. Blainville reported that when antipyrin and chloral hydrate are dispensed together an oily liquid is formed, in which crystals are subsequently found possessing

the taste of neither the one nor the other compound. This statement is confirmed by HERR LUDWIG REUTER, who has made a closer investigation of the crystals as to their nature (*Apot. Zeit.*, January 25, p. 45). They were found to be only slightly soluble in cold alcohol, ether, or chloroform, a little more soluble in boiling alcohol and boiling water, and totally odorless and tasteless. When treated with cold caustic soda solution there was no separation of chloroform, while with ferric chloride there was only a slight yellow coloration, not at all the characteristic red of antipyrin. Upon heating the crystals with caustic soda solution, decomposition took place, traces of chloroform being at first given off, and then much isonitril, together with a separation of antipyrin and its decomposition products; the acidulated liquid then gave an intense red color with ferric chloride. Nitrous acid had no effect upon the crystals in the cold, the characteristic blue-green of isonitrosoantipyrin not being produced. It would appear, therefore, that from antipyrin and chloral hydrate a rather stable compound is formed, described by Herr Reuter as "trichloraldehydphenyldimethylpyrazol," with which composition he considers the results of his analyses to have been in accord. He states that the same compound is formed, also, easily obtained upon heating together chloral hydrate and antipyrin to 115° C., and that it crystallizes from alcohol in dense scales. Upon rabbits the new compound failed to produce the effects characteristic of either of its constituents, and, as far as the experiments went, it appeared to be a therapeutically indifferent body.—*Pharmaceutical Journal and Transactions*, February 1, 1890.

SULPHUR WORTHLESS FOR FUMIGATION.

It appears that the prevailing method of disinfection by means of burning sulphur is considered by some of the leading bacteriologists as of less value than it has heretofore been considered, though we print in another column an abstract of a paper by Dr. Edson, who strenuously maintains the contrary. DR. J. G. JOHNSON, on the other hand, read a paper before the Kings County Medical Society on the 17th ult., in which he stated that he had proved the present system of fumigation as worthless for the destruction of disease-germs; that the fumes of burning sulphur do not penetrate woollens as disease-germs do. He also stated that he had propagated diphtheria from the clippings of blankets after they had undergone a thorough process of fumigation by burning sulphur. Dr. Prudden, of the New York City Board of Health, appears to have come to the same conclusion, and in both New York and Brooklyn currents of steam are to be recommended for disinfecting purposes instead of burning sulphur.—*Medical Record*, January 4, 1890.

ARISTOL.

In a communication recently published by Messrs. Messinger and Vortmann, upon a new series of compounds of iodine with phenol like bodies, special reference was made to a thymol compound as a possible rival to iodoform, under the name "annidalin" (*Pharm. Journ.*, September. 26, 1889, p. 241). It is probably a somewhat more definite form of this compound that has recently been reported upon by DR. EICHHOFF under the name "aristol" (*Apot. Zeit.*, January 25, p. 46). This compound is said to be formed, as a voluminous red-brown amorphous precipitate, when an aqueous solution of iodine in potassium iodide is treated with thymol in caustic soda solution. It is represented as being dithymoldiodide, in which the hydrogen of the two hydroxyls of dithymol is replaced by two equivalents of iodine; the compound is, therefore, calculated to contain 45.8 per cent. of readily removable iodine. Aristol is described as being insoluble in alcohol and freely in ether, but precipitated from the ethereal solution on the addition of alcohol. It is also soluble in fixed oils, but it is necessary to effect solution without heat to avoid decomposition, and for the same reason it must be kept sheltered from light. Upon distilling the compound with lime, dithymol is obtained. Aristol is said to be non-poisonous, it not being absorbed by the organism. It is claimed that it shares with chrysarobin the property of being an active but harmless remedy in psoriasis, with the advantage that it does not cause the same intense coloration of the skin or produce symptoms of conjunctivitis. Further, it is said to act as favorably and quickly as the best remedies in mycosis and lupus, without being so irritating as some, and to be valuable as a dusting-powder for wounds and burns.—*Pharmaceutical Journal and Transactions*, February 1, 1890.

—THE—

Therapeutic Gazette.

Whole Series, Vol. XIV. | DETROIT, MICH., PHILADELPHIA, PA., } April 15, 1890. | Third Series, Vol. VI. No. 4.

CONTENTS.

Original Communications.

PAGE

Glandular Tumors of the Neck. By J. William White, M.D. 217
The Prophylaxis of Tuberculosis. By Karl von Ruck, B.S., M.D. 221
A Study of the Relationship between the Eruption of the Permanent Teeth and the Ailments of Late Childhood. By Louis Starr, M.D. 228
On the Treatment of Puerperal Hemorrhages. By E. P. Hurd, M.D. 237
A Case of Acetanilide-Poisoning. By S. T. Armstrong, M.D., Ph.D. 245

Leading Articles.

Antiseptic Surgery in General Practice 247
A New Antipyretic 249
The Cumulative Action of Certain Medicines 251
The Evils of Hypnotism 252
Orexin, a New Stomachic 252

Reports on Therapeutic Progress.

The Use of Santal Oil 246
The Safe Passage of a Sharp Piece of Glass through the Digestive Tract 254

PAGE

Injections in Acute Gonorrhœa 255
The Use of Air in the Examination and Treatment of Cavities and Canals with the Aid of Reflected Light 256
Angina Pectoris in the Heart Palsy of Acute Specific Infective Disease 256
The Treatment of Fever 257
The Effect of Antipyrin on the Solubility of Caffeine 259
Cystitis in the Female 260
The Action of Camphoric Acid on the Night-Sweats of Phthisis 260
Nitrate of Potassium for Malarial Fevers 261
Sodium Creosotinate 261
Treatment of Chronic Diarrhœa 262
Potassium Bromide as an Antidote to Iodoform 263
The Physiological Treatment of Obesity 263
Symptoms of Lesions of the Spinal Cord 264
The Physiological and Therapeutic Action of Creosotinic Acid 265
Balsam of Peru in Phthisis 266
The Production of Nephritis by Balsam of Peru 266
Nervous Affections in the Course of Whooping-Cough 267
A New Surgical Dressing 267
Pancreatic Diabetes 267
Salol and Terpine Hydrate in Colds 268
Narcotic Effects of Essence of Nutmeg 268
Physiological Action of Selenious Acid 269
Lymphadenoma and its Treatment 269
Use of Resorcin in Whooping-Cough 270

PAGE

Magnesia Isinglass as a Substitute for Plaster of Paris 270

Reviews 271

Correspondence.

Paris Letter 276
Berlin Letter 278
London Letter 280

Notes and Queries.

Abrus-Poisoning 282
The Active Principle of the Condurango Bark 283
Saline Injections into Veins in Diabetic Coma 283
Duboisine 284
Soluble Saccharate of Iron 284
Anisodus Luridus 285
The Mode of Action of Diuretics 285
Scopolia Atropoides 286
The Cause of Pallor 287
Guarana in Chronic Diarrhœa 287
The Infection of Catgut Ligatures 288
Adulteration of Tea in China 288
The Effects of Antipyrin in Whooping-Cough, Chorea, and Enuresis 288
Menthol in the Vomiting of Pregnancy 288

Original Communications.

GLANDULAR TUMORS OF THE NECK.

By J. William White, M.D.*

THE series of cases which I shall bring before you to-day will serve to illustrate the chief varieties of glandular swellings affecting the cervical region, and for the sake of completeness as well as on account of their great frequency I have included among my cases certain specific swellings not usually classed with tumors. First, a few words as to the anatomy of the parts whose pathological changes and clinical symptoms I am about to consider. The usual convenient classification of the lymphatic glands of the neck is into the superficial and deep sets, the former being found between the platysma and sterno-mastoid muscles, often following the course of the external jugular; the latter (*glandulæ concatenatæ*) forming an unbroken chain from the base of the skull to the clavicle, lying along the sheath of the great vessels and by the side of the œsophagus and trachea; between the carotid and the transverse vertebral processes; following the anterior border of the trapezius, or occupying the supra-clavicular fossa. These glands may enlarge so as to become a source of trouble to the patient or of interest to the surgeon from a variety

* Professor of Clinical Surgery in the University of Pennsylvania.

of causes which by way of systematizing the subject we may divide into three great classes.

1. Glandular enlargement from constitutional causes.

2. Glandular enlargement from constitutional causes plus local irritation.

3. Glandular enlargement from local irritation alone.

In the first group are included swellings arising from *a*, syphilis; *b*, carcinoma; *d*, lymphadenoma. Of these the first is much the most frequent.

Syphilis.—This patient is a typical case of this character. A young adult, with a history of suspicious exposure some ten weeks ago, observed three weeks later that a small indurated spot appeared behind the corona glandis, which has remained indolent and painless, slightly elevated, and with scarcely any discharge, just as I show it to you to-day. It was followed, however, in due time, by enlargement of the inguinal lymphatics, and then—almost a week ago—by involvement of the cervical chain, especially those along the edge of the trapezius. This is an unmistakable history, and of course leads us unerringly to the diagnosis of syphilis. The prognosis is unqualifiedly good as to everything but the entire disappearance of the swellings. They never give rise to pain, never suppurate, never constitute a noticeable deformity, but a slight degree of tumefaction usually persists in spite of well-directed constitutional treatment. Local treatment is of no value.

A rarer condition of cervical glandular enlargement, associated with syphilis, I show you in this man who, a month ago, fell and struck his mouth, cutting his lower lip against the edge of his upper incisors. A week ago the trifling sore, which had nearly healed, enlarged, broadened, became covered with a grayish slough, rose above the level of the surrounding surface of the lip, and developed a distinctly hardened base. Since then the glands beneath the chin and in the submaxillary region have enlarged so that you can see them from a distance. This is undoubtedly a case of infecting chancre, and, on inquiry, we learn that this man was in the habit of smoking the pipes of some of his fellow-laborers even while he had the recent cut of the lip. The glandular swelling is therefore the characteristic syphilitic bubo, and will subside under specific treatment. [The sore disappeared promptly under the administration of mercury, and the tumefaction of the glands also subsided, though more slowly.]

Carcinoma.—This is the only class of these swellings that I am unable to illustrate clinically to-day. Primary carcinoma of the glands of the neck is extremely rare. When it does occur it is recognized by the rapid growth of the swelling, its stony hardness, its fixity, the early implication of muscles, fascia, and skin, the development of cachexia, etc. The prognosis is, of course, unfavorable, and operative treatment is not very satisfactory unless the case is seen quite early, and yet it does not follow that the unfortunate patient should be deprived of whatever benefit might result from excision. In many cases the symptoms are most distressing. Pressure on the carotid and jugular causes annoying vertigo, disturbance of vision, etc.; on the sympathetic and on the various cervical nerves, often produces severe neuralgia and sometimes ptosis, irregular dilatation of the pupil, one-sided flushing of the face, etc.; on the œsophagus and trachea, results in dysphagia, dyspnœa, or even aphasia. In such cases it is justifiable to operate, with the clear understanding, on the part of the patient, that the procedure is palliative and the equally clear determination, on the part of the surgeon, to make the operation as thorough as possible, even if, as advised by Mr. Jessett, it is necessary to tie the carotid and jugular above and below the growth. Return of the neoplasm is, of course, almost certain, but it is sometimes delayed for months or even years, during which there is comparative comfort and freedom from pain.

Lymphadenoma.—This patient is a young girl whose appearance will at once attract your attention. She is pale almost to bloodlessness, with dilated pupils and an expression of profound weakness. You can see that she has on both sides of her neck rounded tumors, and, on palpation, these are found to be made up of elastic, mobile, painless glands, rounded, soft or fluctuating, and without evidence of inflammatory action. A further examination reveals similar enlargements in both axillæ and in the right groin, a marked increase in the size of the spleen, and it is reported to me that there is a notable increase in the proportion of white corpuscles in the blood. The disease is evidently lymphadenoma (or Hodgkins's disease) together with leucocythæmia. The prognosis is unfavorable. Operation is contraindicated. The treatment should be tonic and hygienic. Sea air, arsenic, iron (especially the iodide), cod-liver oil, etc., are the usual remedies, and they are usually disappointing.

The second group of glandular tumors includes those in which there is an underlying constitutional condition with a certain degree of local irritation superadded. These are decidedly the most important from the surgical stand-point, as affording the largest field for operation with the best prospect of permanent good results. The word "scrofulous" would describe the growths belonging in this class, but that word demands some little definition.

At the present time it is very generally accepted that scrofula and tubercle are pathologically, or at least etiologically, identical, for the reasons that the same characteristic products are found in both affections; that such products, taken from so-called scrofulous glands and inoculated on other animals, produce tuberculosis; and, finally, because the bacillus of tubercle is frequently present in scrofulous diseases and has all the properties of the same bacillus when associated with genuine tubercle. The acceptance of this theory should have great weight in deciding the course of the practical surgeon in his management of cases of this character.

There can be little doubt that glands affected with this form of tubercular inflammation are liable to become foci of infection, not only for other glands immediately connected with them, but for the general system. While, of course, there is the greatest possible difference between the progress of a case of acute tuberculosis and that of scrofulous gland disease (which may be regarded as the two clinical extremes of the tubercular diathesis), yet so long as we do not know the exact relation which one bears to the other, but do know that their etiology and their pathological anatomy are identical, and that either one may give rise to the other, we certainly have a clear indication for operative interference in those cases which resist other forms of treatment.

A case of this character will probably have the following characteristics: The patient will be comparatively young, very often between the ages of three and fifteen; there will be a family history of scrofula or consumption; some source of local irritation will be discovered, such as a carious tooth, a suppurative otitis, enlarged tonsils, post-nasal catarrh, eczema of the scalp, or some similar irritating cause; the patient has the so-called scrofulous physiognomy, is dull and stupid in appearance; the glands themselves are more solid and less elastic than in lymphadenoma; they are more fixed and more tender than are the glands in that disease, and have a less wide-spread distribution; they are especially apt to undergo the change known as caseation, the cheesy degenerated product either remaining harmless or, like any other foreign body, setting up suppuration and causing the formation of an abscess.

The treatment of such conditions may be considered, following the excellent classification of Mr. Frederick Treves (whose writings upon this subject, together with those of his brother, the surgeon to the Royal Hospital for Scrofula, at Margate, are without exception the most authoritative in recent times), by clothing the patient carefully with wool; sending him to some sea-side or mountain resort, preferably the former; the administration of tonics, such as arsenic, iron, quinine, and cod-liver oil; the removal of the local irritation, whatever it may have been, which gave rise primarily to the glandular inflammation; the employment of rest by use of a stiff collar or stock; the inunction of some resolvent ointments, such as the ointment of iodide of lead, etc. Under this combined treatment many scrofulous enlargements will entirely disappear; and I show you here two cases in which glands that a few weeks ago constituted a mass as large as a small apple have now become imperceptible to sight, and barely to be found by touch.

But in hospital practice particularly, and in patients whom you do not see in the early stages of the growth, this treatment cannot be satisfactorily carried out. Poor people cannot go or send their children to the sea-shore or to watering places in the mountains, and they are very apt indeed to neglect the most essential of the methods of local treatment, namely, that of rest for the head and neck. Such was the history of the three cases which I now show you, and which only presented themselves at this clinic after the glandular mass had attained a size varying from that of a cocoanut to that of a child's head. They have been operated upon by me as you know, at the different ward classes and with the assistance of members of your class.

In such cases operation must be thorough and unsparing, and these are typical examples of the difficulties and dangers which surround these extensive dissections of the neck. In each case it was necessary to lay bare both the anterior and posterior cervical triangles, to dissect the sterno-cleido-mastoid free for its entire length, and, in one, to divide it in the middle and turn it upward and downward.

In all of them the growth required to be dissected carefully from the great vessels, particularly from the internal jugular vein, which is chiefly endangered in these cases. In all of them also the growth extended into the supra-clavicular fossa and had to be separated from the immediate neighborhood of the subclavian vessels and the brachial plexus. The phrenic was exposed lying on the scalenus anticus in two of the cases, and in all of them the dissection had to be carried down by the side of the trachea even to the œsophagus and the transverse processes of the vertebræ. The cardinal secret of success in these operations is to keep on the tumor,—that is, to cut with the knife, or to scratch with a grooved director, through the bands of connective tissue which hold the gland down to the neighboring parts, doing this cutting and scratching directly upon the glands themselves at safe limits from the edge nearest to important structures. By doing this patiently it is remarkable what enormous growths of this kind may be safely removed. These cases are convalescent and in none has there been the least alarming symptom since the operation. The highest temperature reached was 100.5° and in each case union by first intention took place through the entire length of the skin wound. Free provision for drainage is made by the use of large rubber drainage-tubes for the first twenty-four or forty-eight hours, at the end of which time they are withdrawn wholly or partially and are replaced by strands of catgut. The wound is brought together with sutures of silver wire or silk-worm gut, and is covered with cyanide gauze, and all the hollows of the neck from the chin to the clavicle are filled with bichloride cotton, which is held in place by a bandage in the shape of a double figure-of-eight of the head and neck, and neck and axilla. It is rare that more than two or, at the most, three dressings are necessary, and the wound is usually healed completely in about ten days, but such good results can only be obtained if, after the operation, the head and neck of the patient are immobilized by the employment of sand-bags placed on either side of the head as the patient lies supine, and heavy enough to prevent rotation of the head on the spine.

The third and last group of cases includes those in which the cause is simply local irritation without the admixture of constitutional infection of any sort. I am enabled to illustrate this form of glandular swelling by this young man, whose swollen and protruding under lip is in striking contrast with that of the patient with labial chancre, whom you saw a few moments ago. He gives us a history of herpetic ulceration followed by a diffuse general inflammation of the cellular tissue of the lip, running into suppuration and to the formation of the labial abscess which I now evacuate. As a result of this local inflammatory process there has been a similar process set up in the cervical glands, especially in the submaxillary region and its vicinity. We find an ill-defined, tender, hot, hard, red, brawny swelling with a focus of softening already, although the whole trouble is of but one week's duration. Emptying of the small glandular abscess with the cure of the original source of trouble will probably cause the disappearance of all the symptoms in a few days.

In *résumé* let me reiterate the chief characteristics of these different forms of glandular tumors of the neck:

1. Lymphatic enlargements, situated in the neck and dependent on constitutional causes, may arise from syphilis, carcinoma, and lymphadenoma.

When from *syphilis*, they affect by preference the posterior chain of glands, are small, freely movable, painless, bilateral, and yield readily to specific treatment.

If *carcinomatous*, they form a very hard, rapidly-growing mass, infiltrating surrounding parts, becoming fixed to everything beneath it, involving the skin, causing serious pressure symptoms, and followed by the development of cachexia. Operative treatment is useful, though only palliative.

If *lymphadenomatous*, they are rounded, regular, movable, painless, elastic or fluctuating, do not affect the skin, and are associated with anæmia, leucocythæmia, and with enlargement of other and widely removed lymphatics and of the spleen. The treatment should be tonic and supporting. Operative interference is useless.

2. *Scrofulous adenitis* is essentially a tubercular inflammation of glands, occurring usually in young persons with a scrofulous or phthisical family history, and with some form of local irritation superadded, which must be sought for in the mouth or pharynx or about the face or head. The glands are all characterized by a tendency to caseation, with or without suppuration, and form indolent masses, less defined, more fixed, and more tender than in lymphadenoma. The treatment in recent cases should be first hygienic and tonic with fixation of the head, and, if

ossible, with cure of the proximate cause. f this fails, or without attempting it in old ases, excision should be resorted to.

3. *Simple adenitis* results from some source f local irritation, and constitutes an acute, nder, inflamed, poorly-defined swelling, run- ing a rapid course to either suppuration or esolution. Treatment should consist in re- oval of the cause and in the application of esolvent lotions or ointments, or, later, in the ree evacuation of pus.

THE PROPHYLAXIS OF TUBERCULOSIS.*

By Karl von Ruck, B.S., M.D.†

"WITHOUT bacillus no tuberculosis" is a dictum to which every modern pathologist unhesitatingly subscribes.

Accepting this, and believing the bacillus of Koch to be the only direct etiological factor of all tubercular disease, experience has taught us in addition that a favorable soil for its growth and development is essential, which is furnished by the tissues of certain individuals, whom we say possess a predisposition to tuberculosis.

To prevent tuberculosis, the indications based upon its etiology are to destroy all tubercle bacilli, or matter containing them, or, if that be impossible, to protect the predisposed individual from contact with them, and, failing in either, to eradicate the predisposition.

According to the measure of success with which we comply with these indications, tubercular disease must become less frequent or disappear altogether. Although eight years have now elapsed since the discovery of the bacillus of tuberculosis, and the incontrovertible proof furnished by Koch and others of its causal relation to all tubercular disease, and the indications for prevention, as here set forth, have existed for all this time, it does not appear that any appreciable reduction in the occurrence of, or death-rate from, the disease has been accomplished; and we naturally have to conclude that either the etiology is wrong, or the indications are impossible to comply with, or that for some reason the necessary attention to prophylactic measures has not been given.

It is hardly necessary that I should review all the facts existing to confirm the now generally accepted opinion, that the bacillus of Koch is the sole cause of tubercular processes. The foremost bacteriologists, pathologists, and clinicians of the world have accepted this with a unanimity scarcely ever before or since witnessed in any scientific discovery; and the occasional feeble efforts to disprove or question the causal relation of the bacillus to the disease in question may be passed without further notice, coming, as they do, from sources where original investigations have either not been the basis for the opinions advanced, or where the facilities at command or methods employed were singularly defective.

Neither can the apparent failure of our prophylactic measures be ascribed to the impossibility of carrying them out, and while the ideal may never be reached, as I shall show further on, enough may be accomplished to make them felt more distinctly and surely than has been the case heretofore.

In our efforts to devise a curative method of treatment by germicidal agents, I believe the prophylaxis has for the time received but limited attention; but with the realization that a specific treatment is not likely to be discovered in the near future, more attention will, of necessity, fall to the subject of prevention.

To comply with the indications set forth depends directly upon the public, particularly the patients, their friends, and attendants; indirectly, however, very largely upon the professional adviser, who alone can point the way by educating the interested, and suggesting the means to the end, and, as far as we have neglected to do this, the fault for better results lies at our own door.

The public, and more particularly the subjects of the disease and their attendants, cannot do their part unless we teach it to them, and while some vague idea exists that the disease is communicable, the sources of infection and the mode in which the infecting material gains entrance to the organism are little, if at all, understood outside of the medical profession. Even here, from the lack of preventive measures adopted in individual cases, which come constantly under our notice, one might almost feel tempted to believe that a considerable number of our professional brethren are as ignorant as are the laity; for it would seem that even a non-believer in the value of Koch's discovery, or in the contagiousness of tuberculosis, through the medium of disease-secretions, would, in view of the generally-accepted opinion to the

---

* Read before the Buncombe County Medical Society, Asheville, N. C., March 3, 1890.

† Director Sanitarium for Diseases of the Lungs and Throat, Asheville, N. C.

contrary, give those who come in contact with tubercular patients the benefit of doubt, since the measures to be adopted are not only harmless, but all tend to cleanliness, which is said to be next to godliness!

I believe, however, that the true reason for the indifference to prophylactic measures in practice must be explained by the fact that many practitioners seldom make an absolute differential diagnosis between tubercular and non-tubercular affections, and we hear thus of consumption of a non-tubercular character, of chronic or interstitial pneumonias, of broncho-pneumonia and peribronchitis in contradistinction from tubercular disease of the lungs; and of strumous synovitis, arthritis or tumor albus, instead of tubercular disease of the joints, when a microscopical examination of the secretions from the parts involved has never been made, perhaps not even been thought of, and tubercular disease is more or less strongly suspected only, in rapidly-progressing or far-advanced cases.

All such practice must stop before much can be accomplished in the prevention of tuberculosis. We must become sufficiently expert in the use of the microscope for diagnostic purposes, so we can at least make a reliable examination of sputa and other human excretions. We must certainly have such examination made for us by a brother practitioner, in case we have not the time, apparatus, or ability to do it ourselves, and much good would result if we all could realize that the microscope can be of much greater aid to successful practice, and can preserve us from more serious blunders, as can, for instance, the fever thermometer, without which we would almost feel ourselves lost, especially in the treatment of febrile affections.

To a successful prophylaxis of tuberculosis an early diagnosis is highly essential, for infection may occur from subjects in the beginning of the disease. I have myself demonstrated the bacilli in the bloody expectoration after a slight initial hemorrhage, when there were no other symptoms whatever, either preceding or immediately following, to justify the diagnosis of tuberculosis. On the contrary, the assurance had been given by another practitioner that the hemorrhage was from the throat, and merited no serious consideration. However, my diagnosis, confidently made at that time, received subsequently the saddest confirmation.

It is, therefore, plain enough that if the true diagnosis is delayed until the disease becomes almost self-evident, susceptible individuals may have become infected, especia as such frequently exist as members in t family of such patients. Besides, the m favorable period for successful managem of the case itself will have been allowed pass by, and, although less apparent, we under such circumstances no less culpa than had we jeopardized the lives of oth as well as that of the patient, by failure properly diagnose small-pox, diphtheria, scarlatina, in neglecting unerring methods diagnosis, and treated our patient for so other malady.

Let us, therefore, make sure that we p form our whole duty, in the first place, those who place their health and lives i our keeping, and next to the public at lar as educators and advisers in matters pertai ing to public health and to our profession ministers to the sufferings of humanity. L us set an example for integrity of purpose allow no opportunity to escape, which m aid in restricting and preventing the ravag of a disease which is, of all diseases, the mo prolific cause of death, and claims its victi by the hundreds of thousands every year, specting no one, not even our own persons families.

The inherent desire for self-preservati on the part of man and the well-ground fear of the disease by mankind in gene will become our faithful allies in our effo for its prevention; and even by the few of here assembled much may be done direct and indirectly by example, if we will av ourselves of this advantage and of every o portunity, and continue determined and unr mitting in our efforts.

To this end we must strive to become mo and more accurate diagnosticians, both microscopical and physical examinatio bearing constantly in mind that the medici of the future is "preventive medicine," esp cially so in the disease under consideratio and that in the light of its etiology every ca we see resulted from the ignorance or car lessness of some one, for which some me ber of our profession may be directly or ind rectly responsible. Let us see to it th those whom we advise professionally sha understand the contagiousness of tuberculo sis and the usual mode of communicatio from those who suffer from the disease. L us in our practice insist upon the measur which the etiology naturally suggests for i prevention, and never become discourage by the wide dissemination of the infectu material.

lthough a matter presumably well known ll of us, allow me to review the sources modes of infection as we understand at the present time, and the means they gest for prevention.

e believe that the morbid secretions from parts or organs involved in tubercular se contain the bacilli of tuberculosis, as e tissues which are the seat of the dis-. We also believe that while infection occasionally threaten from tubercular als, infection is by far more likely to r through contact with the human sub-

xperience has demonstrated that secre- containing bacilli cannot give off the while in the moist or wet state, but they find entrance into the organism lly by inhalation, the excretions having become dry and pulverized, and then up by currents of air in the form of . Further, that the sputum of subjects lmonary tuberculosis is of all the excre- the greatest source of danger, the bacilli ch sputum retaining their vitality for ks and months.

e further believe that if these specific ms or spores find entrance into the tissues sceptible individuals, tuberculosis of the s invaded will follow, but that there are viduals who for the time being are pro- d from such infection,—*i.e.*, they pos- a sufficient cell-resisting power; so that struggle which ensues between the living of the organism and the infecting bacilli omes readily determined in favor of the er, the bacilli being destroyed without ry to the organism.

he announcement of Metchinkoff regard- the method of infection and resistance ed to the bacilli on the part of the or- ism is certainly very interesting, and has ived some confirmation from other ob- vers. According to him, the particular s which carry on the defensive action are so-called phagocytes, which, in the first ce derived from the wandering leuco- es, are later re-enforced from the fixed nective tissue-cells, and appear immedi- y at the point of invasion, by the irrita- n set up, and practically devour the in- ders, taking them up within their cell velope, there to become disintegrated. is Metchinkoff and others claim to have ually observed in experimental inoculation der the microscope, not only in tuber- losis but also in other diseases due to in- ion by micro-organisms, the result of the battle between the combating cells determining the disease and the life or death of the organism.

Whether or not Metchinkoff's announcement will stand the test of further research, it appears very reasonable, and, were it not for this successful resistance offered by our living tissues, the whole of the human family would long ago have perished from tuberculosis and other infectious diseases.

To destroy all tubercular matter, or the germs and spores therein contained, before it can become dry, and as fine powder or dust mingle with the air we breathe, or to keep it in a state of moisture until all germ life shall have ceased, fulfils every indication for successful prevention of infection by inhalation.

In the nature of human affairs we can, however, only hope to approximate this, more or less, according to the control we have or exercise over the subjects of the disease. Much more can be done than is the case at the present time, for once understanding the danger, our patients aid us in our efforts according to their intelligence. I find that the great majority of cases coming under my care never had a microscopical examination made of their expectoration, and seem to be entirely unaware of any danger to others. Certainly, they have no knowledge that they need to exercise any care or circumspection in the disposition of their sputa.

I find no opposition to my rules that sputa must only be deposited into the expectoration vessels containing a disinfectant fluid, and never upon handkerchiefs, bedding, clothing, carpets, floors, walks, streets, or the ground; and that in case of accidental soiling of any thing or place, the matter is to be promptly attended to, by subjecting the article or place to hot water containing corrosive sublimate 1 part in 500 or 1000.

To provide for emergencies, should the patient find himself without proper expectoration vessels, Dr. Dettweiler, the director of the Falkenstein Institution for Consumptives, provides his patients with small expectoration flasks, to be carried in the pocket.

Finding some disregard to their use, I have adopted what I believe to answer as well,—the use of paper napkins, cut up into small pieces, which are carried by the patients, and, after use, placed into an envelope, to be afterwards destroyed by fire or deposited into the large expectoration vessels containing disinfectants at the earliest opportunity. Small pieces of newspaper answer the purpose as well.

I find that, since I make the danger of infection so very plain to my patients and their attendants, and especially since I point out to the former the possibility of becoming re-infected, or of infecting their still healthy lung portions, by their own or others' carelessness, and that this may possibly determine the final result in a given case; and since I warn the latter that by the patients' carelessness their own life may become jeopardized, I have a co-operation on the part of all as sincere as it is effectual; and the least deviation from my rules regarding this matter by fellow-patients is promptly and confidentially reported to me and my assistants.

I am aware, gentlemen, that I thus make much of the supposed danger, and, perhaps, more than is strictly warrantable, inasmuch as experience has well established, that despite unfavorable surroundings, direct infection does not always result; but, as we understand the subject now, we must admit that a certain degree of danger exists, and therefore our precautions cannot be too thorough, and for the best results we must make the patients and attendants interested parties, as they really are.

I allow no final disposition of secretions from tubercular patients without previous disinfection; they are then deposited into properly-trapped sewers, in the absence of which, burial in ground, not likely to be disturbed, would suggest itself.

Aside from the danger from inhalation of tubercle bacilli, or particles of dust containing them, infection of the alimentary canal may occur from the ingestion of food derived from tubercular animals, or such food which may have accidentally become contaminated with secretions from tubercular patients.

That such infection may occur has been demonstrated experimentally upon the lower animals, and been clinically confirmed in many instances. Here, too, a certain general predisposition is essential in addition to functional disturbance of the digestive organs, which latter seems to stand in close relation to such infection. As long as the gastric juices are normally secreted, the germs are not apt to pass the stomach in an active condition. This, for instance, is plainly much more likely to occur in the presence of gastric catarrh, especially of infants and others, who, on account of the anæmia often associated, are thereby predisposed subjects as well.

Secondary tubercular disease of the intestinal tract is, no doubt, frequently due to swallowing of expectoration containing bacilli, adhering to the mucous surfaces of the mouth and fauces, especially when, as is often the case, the patient is subject to gastric disturbances.

Against tubercular food products from animals we have a most efficient protection by subjecting the milk and flesh from doubtful sources to boiling, and by careful attention to all digestive derangements in predisposed and tubercular patients. Tubercular mothers should not only never nurse their children, but should relinquish their care to healthy persons. Especially should they be warned not to kiss their children upon the lips. Kissing by tubercular persons of their friends and relatives is a source of danger to the latter at all times, and no sentimental notions should be allowed to interfere to make known such danger to the interested parties.

Tubercular persons should never be allowed to prepare food or handle eating-utensils, as cooks or servants in our families; particles of expectoration are frequently projected from the mouth in the act of coughing, unconsciously, and we can never be sure of such persons being so scrupulously clean as to eliminate all sources of danger.

The common use of eating-utensils, of handkerchiefs, table-, room-, and bed-linen by infected and well people must be strictly forbidden. All these require exposure to boiling water or other disinfection before they can be properly used by those whom we desire to protect. These are, indeed, matters of common cleanliness, to which, nevertheless, the attention of the intelligent needs to be directed; the ignorant must certainly be closely watched.

It is of the greatest interest to any community, but especially to one like Asheville, which, as a much-frequented resort, both by the predisposed as well as by the actual sufferers from the disease, harbors a large number of susceptible and infected individuals, that, for the welfare of all concerned, the dangers, sources, and modes of infection shall be thoroughly understood; and I take this opportunity of appealing to every board of health, and especially to the medical members of the board of health of our city, to seriously consider the propriety of issuing printed directions and rules to the public, particularly to the hotels and boarding-houses, setting forth the dangers, and giving proper instructions for their avoidance. Especially would I recommend the frequent scrubbing and washing with disinfecting

solutions of the furniture, floors, walls, and wood-work of rooms occupied by tubercular patients, as also the care necessary regarding eating-utensils, linen, etc.

Particular stress should be laid upon the necessity of thorough disinfection of the entire room and its contents before it may again be occupied by another person, after having been occupied by a consumptive.

I have repeatedly demonstrated to myself that a house or institution where many tubercular patients reside may be made a source of *protection*, rather than infection, by conscientiously following the rules advocated in this essay and carried out in my institution. After over four years of constant association with such patients, no case of infection has occurred, not even in my *personelle*, several of which are clearly predisposed or recovered subjects.

Microscopical examinations of dust from rooms occupied by patients in my institution, and whose sputum showed the tubercle bacilli in great numbers, and the dust collected from most favorable places, and upon the day before the usual general cleansing, never showed even one single bacillus of tuberculosis. Error was excluded by a test experiment upon two occasions, where, in the dust from a room, in which a tubercular patient had been confined in his own home, both spores and bacilli were found in each specimen examined.

Similar have been the results following such inquiries in a number of good institutions for consumptives in Europe, and such evidence, although showing only an *incidental* advantage, is a strong plea in favor of treating consumptives in special sanitariæ only.

But even in private practice, I am well satisfied that, if we will do our part faithfully and take advantage of all opportunities, the dangers from infection may be so materially diminished, that in due time an unmistakable reduction in the death-rate from the disease will become manifest.

Equal care is essential in the disposition of urine, fæces, and pus, when tubercular disease of the kidneys, the intestine, joints, and other localities is present. I have only recently demonstrated tubercle bacilli in the pus from a rectal ulceration, and some years ago found them in the pus from a suppurating cervical gland, there being no disease demonstrable in any other organ. Infection in this case probably occurred through the lymphatics of the mouth. The lady in question had recently nursed a tubercular father until his death; and it is of interest in this connection that I persuaded this patient to allow me to excise two recently enlarged glands from the neck of her 7-year old daughter, and in every section made from these glands tubercle bacilli were present. I have since made it a practice, as a preventive measure, to remove all chronically enlarged glands in the neck which do not yield to the usual remedies, and in several of such glands, although not in all, I found the bacilli.

I come now to the consideration of the predisposition and the means for its eradication, as well as to the methods to be employed, for the more successful protection of those in whose constitution the predisposition has become permanently fixed.

Wherein this predisposition actually exists is a most difficult and vexing question.

We know, indeed, sometimes at a glance, the looks and appearance of persons predisposed to tuberculosis. We also know the most important and usual causes which produce the predisposition, and therefore are, as a rule, not hampered or perplexed in diagnosis; but why in these cases the power of resistance of the tissue-cells should be so diminished, is not to be demonstrated, inasmuch as we are unable to show either morphological, chemical, or physiological differences between the tissue-cells of the predisposed and of those who successfully resist tubercular infection.

We have, therefore, refuge to theory, and reason from experience that all living tissues require proper nutrition, and want of such leads to a weakened state or death of the tissues involved; in other words, that the life and vitality of living tissue stands in intimate relation to a proper nutritive supply, and with the theory of imperfect nutrition as the cause for diminished vitality and resisting power, we must be content in our present state of knowledge, the more so as we succeed in eradicating the predisposition in part, or entirely in proportion as our measures based upon this theory are successful.

The disposition to tubercular infection is either inherited or acquired. The inherited form is best known and described as the "phthisical habitus," consisting in slender stature, with elongated flat thorax, a peculiar vulnerability of the mucous membranes, especially of the respiratory organs, leading to frequent acute and eventually chronic catarrhal processes; in an easily-excited, small vascular system, with a disproportionately small heart, as compared with the lungs,

which is frequently the subject of palpitation; in a tendency to glandular enlargements, narrow lymph spaces, etc. These variously associated, some more or less predominating features can be readily believed to be factors in the production and maintenance of nutritive disturbances, especially of the respiratory organs, where, besides the undue proportions between lungs and heart, additional causes for local anæmia can be referred to anatomical relations; as, for instance, the position of the upper lobes, which are the almost constant seat of initial changes.

The rarity with which we observe pulmonary tuberculosis associated with the common valvular affections of the heart, and the frequency with which we find it associated with stenosis of the pulmonary orifice, goes to show that an overfilled lesser circulation protects from, and the reverse condition predisposes to, tubercular infection.

In this connection Volland refers to the relation and anastomosis between the nutrient bronchial arteries and the pulmonary artery and veins upon the bronchial mucous membranes, as well as the deeper tissues, the former also giving off numerous branches to the pulmonary system. If, now, the blood-pressure in the lesser circulation is diminished, the lateral pressure to the nutrient bronchial vessels is diminished in proportion, thereby allowing and favoring a ready flow of blood from the bronchial to the pulmonary vessels, without having first given off sufficient nutrient material to the lung-tissue. From their position the apices would naturally suffer first.

The phthisical habitus may also exist in more or less pronounced form when no family history of tuberculosis can be elicited, and phthisis frequently occurs in the offspring of tubercular or predisposed parents, such offsprings having apparently a splendid physique, but although strong and vigorous up to a certain age, yet in due time fall ready victims to the disease.

When neither phthisical disease or predisposition on the part of parents exists, and still a phthisical habitus is present, we find, upon careful inquiry, as Brehmer has pointed out long ago, that some other constitutional malady or nutritive derangement, especially on the part of the mother, existed at the time of conception or during gestation. I have often been surprised at the regularity with which it is found that the parents were syphilitic or scrofulous; that the mother was in very poor health before or during the pregnancy; that the subject of the phthisical habitus is the fifth, sixth, or a later child, or is born of parents one or both having been given to sexual excesses, whereby, in addition to rapidly succeeding births, the procreative powers could be believed to have become weakened or partially exhausted. In such instances we learn that the older children are strong and well, but the last had never been strong like the others, and had always a poor and capricious appetite.

So children of phthisical or predisposed parents, although not possessing the pronounced physical characteristics of predisposition, acquire the disease frequently in inverse order of their ages, the youngest suffers first, and so on, and frequently the older children escape.

All this tends to show that there is a certain relation between the vigor and strength of the parents on one part, and the nutritive processes of their children on the other.

The acquired predisposition may be temporary, as in anæmia following acute and exhausting diseases, and may afterwards be readily recovered from. A person may, therefore, be predisposed at one time and not at another, or it may be more lasting when damage has resulted from various influences tending to debility and feebleness of the organism, among which may be enumerated insufficient food and clothing, long-continued hardships, exposures, damp and cellar-like habitations, mental and physical overexertions, previous disease, deleterious effects from occupation, remorse, long imprisonment, and especially want of out-of-door life and physical exercise, all these influences operating with more force during the period of development and growth. To illustrate, I need only call your attention to the frequency with which we observe tubercular disease to develop in young girls and boys working in factories, or to follow long-continued gastric and intestinal affections and the consequent anæmia, but more particularly diseases in which the respiratory organs are involved, such as measles, whooping-cough, catarrhal pneumonias, etc., and point out the great mortality from phthisis in penal institutions, amounting in many prisons to over sixty per cent., whereas the general death-rate from this disease is less than fifteen per cent. Surely, if we review these known causes, there appears no lack for opportunity for the efforts of not only the medical profession, but also for those o

the humanitarian, statesman, and public economist to bring about a change for the better.

To prevent the inherited form we cannot hope, for it means to prevent marriage, and the bearing of children not only by the already affected but also by those predisposed to tubercular disease.

As professional advisers, we are not often consulted in the making of marriages, and consulted or not, our interpositions are seldom, if ever, heeded. Certain it is, it is as thankless as it is useless to interfere upon grounds, as a rule, entirely beyond the appreciation of the interested parties.

Our efforts must, therefore, be directed towards the eradication of the inherited or acquired predisposition, which offers a large field for our labors in the application of the necessary hygienic and therapeutic measures, the enumeration of which for special conditions would, however, extend this paper too far. They must vary not only with the indications of the particular case, but also with the social or financial conditions of the patient, all having for their object the improvement of the nutritive processes in general and of the lungs in particular, by bringing to the normal lost or impaired functions.

In addition to the measures which can be applied at home, we can derive most potent aid from the employment of climatic influences, which should be taken advantage of whenever possible. I say "in addition," and want to emphasize it, for it is most unreasonable to expect everything from climate, whose influence can only be fully exerted when old and vicious habits and conditions are eliminated, and a proper hygienic life takes their place, and when other existing therapeutic indications are also complied with; for acquired chronic disease must be overcome here as well as there, and climate in the presence of morbid states is simply an aid in their removal more or less important. Patients will commit errors of diet in any climate, the skin will require care, catarrhal states of the digestive organs must be cured, nasal disease, with obstruction by hypertrophies, and new growths must be properly treated. The predisposed require advice as to time and amount of out-of-door life and exercise at climatic resorts as well, if we want to obtain the best results.

In the selection of climate we must be largely governed by accumulated experience; while any change which takes the individual out of his accustomed habits and associations, and brings new ideas, rest, and out-of-door life, will be beneficial; some localities and regions have been found especially beneficial for those predisposed to or already suffering from tubercular disease, in aiding the restoration of normal functions, and, at the same time, exerting an undoubted protecting influence from infection.

We have learned from carefully-conducted investigation and reliable mortality statistics that tubercular disease is much more frequent in some localities than in others, and that there are some places the native residents of which enjoy an almost absolute immunity, as is the case with the residents of the Asheville plateau. This immunity appears uninfluenced by the sojourn in such places of many tubercular individuals, and must, therefore, depend upon the rapidity with which the disease germs lose their infecting properties, or the more successful resistance which the tissues are able to offer to infection, or both.

From a general survey of such climatic resorts, we find they have many things in common,—they are either elevated several thousand feet above sea-level and mountainous, or are sea-coast localities, with the general air-currents from the sea; they have a porous soil, natural drainage, usually a cool, but not too cold, relatively dry atmosphere, plenty of sunshine, and, wherever it has been determined, the air contains ozone much in excess of the amount found at less unfavorable places, at which it frequently is entirely absent or only present in traces.

The increasing interest in medical climatology will undoubtedly lead to more accurate data on this subject. To me it seems probable that the ozone is one of the most important factors, as to it may be justly attributed the demonstrated absence of disease germs in the air of such places, exerting its germicidal influence upon the tubercle bacilli as well, thus becoming a curative and protecting agent at the same time. This would also account for the fact that tubercular disease keeps in abeyance, in spite of the many tubercular patients visiting such places; and ozone, as an active form of oxygen, in addition to favorable conditions of temperature, sunshine, and humidity, is a stimulant, leading to better appetite, digestion, and nutrition, and we will not have to strain our belief too much in ascribing to it both an influence for protection and a better resisting power of the organism.

By taking proper advantage, both of direct

and climatic management, in a considerable number of cases, the inherited disposition may be entirely eradicated, especially if our measures are taken early, during the period of development and growth; and the subject may be allowed to return to his former place of residence, being cautioned to an out-of-door life of regularity, free from all excesses. In the acquired form, a favorable result obtains the more readily, unless the disposition is continued by incurable disease. When the disposition has become permanently fixed, a continuous residence in a favorable climate, and there in the open country, where contact with tubercular patients does not occur, becomes imperative. I would lay especial stress upon the necessity of predisposed individuals avoiding close association with cases where the actual disease is already developed, until we can have a much better and systematic co-operation by all concerned to the necessary preventive measures from infection by bacilli-containing secretions. Several cases have come to my notice where it appeared that in families with hereditary predispositions, and where sufferers from the disease were entertained as boarders, the disease developed in members that could not be supposed to have been infected before being removed to the favorable climate.

Before closing this paper, I cannot but recur to the appalling death-rate from tuberculosis in our penal institutions, in which a sentence for a long term of years becomes almost a death-sentence eventually; and, after a considerable number of years of imprisonment, when the disease usually develops, the disposition having been acquired by remorse, unhygienic surroundings, and especially by want of out-of-door life and exercise.

It is certainly not the intention of our laws to add such a probability as a part of the punishment. We had better condemn the criminal to death at once, rather than to compel him to serve a long term of imprisonment, and then have him almost surely fall a victim to preventable disease, during the continuance of which he becomes in addition a source of danger to his fellow-man.

The partial adoption by our State of convict labor upon public works, which keeps the well prisoner separated from infected subjects and gives him an out-of-door life, although perhaps not inaugurated for the purposes for which I advocate it, is a most salutary measure, deserving imitation by other States as well. I understand, however, that such outside labor is practically confined to colored convicts, and from my stand-point this would appear to be a discrimination against the whites.

In many States the convicts are still hopelessly confined within the walls of the prison, or even a single cell, with but an hour per day for walking exercise out of doors, the weather permitting; and the serious attention to this matter of our law-makers and prison reformers is urgently demanded for their efforts to secure an ample amount of out-of-door life to every convict whom we desire to reform but not to kill.

In conclusion, I may say that, although no original contribution has been made in this paper which might lead to the speedy extermination of all tubercular disease, I nevertheless hope that the incomplete review given may for all of us be the means for the revival and increase of interest in, and for more persistent efforts towards, a successful prophylaxis of tuberculosis.

ASHEVILLE, N. C., February 2, 1890.

A STUDY OF THE RELATIONSHIP BETWEEN THE ERUPTION OF THE PERMANENT TEETH AND THE AILMENTS OF LATE CHILDHOOD.

BY LOUIS STARR, M.D., PHILADELPHIA, PA.

ERUPTION OF THE PERMANENT TEETH.

THE eruption of the milk teeth, though physiological, is so uniformly regarded as dangerous, that both physicians and parents congratulate themselves when infants under their charge pass through this process without trouble, or safely weather the various diseases that may arise during its course. The interval between the fourth and thirtieth months of an infant's life—the period of primary dentition—is an era of great and widely-extended physical progress. The teeth are advancing, the follicular apparatus of the stomach and intestinal canal is undergoing development in preparation for the digestion and absorption of mixed food; the cerebro-spinal system is rapidly growing and functionally very active, and the organs and tissues of the whole body are in a state of active change. This period of normal transition must also be one in which there is great susceptibility to abnormal change or disease, provided there be a causal influence at work. Such an influence may either originate outside of t

body, as when there is exposure to cold or to contagion, or come from within in the form of some perversion of a physiological process.

Difficult dentition stands prominent in the latter class. During it, irritation of the gums very often produces stomatitis with fever, and the fever in turn leads to enfeebled digestion and impaired nutrition, conditions that open the way to catarrh of the mucous membrane of the bronchial tubes and gastro-intestinal tract, and to other intercurrent affections. Again, the local irritation may be reflected through the widely extended connection of the dental nerves, and give rise to well-known disorders of distant organs and tissues,—for example, the brain, eyes, stomach, skin, and so on.

With these conditions fully recognized, it is surprising that second dentition has not been accorded the position it deserves as a cause of ill-health in later childhood. In second dentition the elements of local irritation with fever are quite as potent as before. There is, however, less activity of development or rapidity of change, if we except the radical alteration in the system occasioned by the approach of puberty. Therefore there must be less susceptibility to disease, and this fact, taken with the greater resisting power of advancing age, fully accounts for what every observer will find to be true,—namely, that the disorders of this period are less frequent, and, as a rule, less dangerous than those that attend the cutting of the milk teeth. Nevertheless the etiological relations of the eruption of the permanent teeth will fully repay a careful study.

The subject will be considered here in its relation to the time between the fifth year and the establishment of puberty, when childhood is over and youth or maidenhood begins.

The permanent teeth are cut in the following order:

1. Four first molars, five to six years.
2. Four central incisors, six to eight years.
3. Four lateral incisors, seven to nine years.
4. Four first bicuspids, nine to ten years.
5. Four second bicuspids, ten to twelve years.
6. Four canines, eleven to thirteen years.
7. Four second molars, twelve to fourteen years.
8. Four posterior molars (or "wisdom teeth," not entering into this study), seventeen to twenty-one years.

Of the twenty-eight teeth cut within the period already mentioned,—the fifth to the fifteenth years,—the first and seventh sets are developed *de novo*, and are more likely to give rise to trouble, particularly of the oral mucous membrane. The other sets take the place of corresponding milk teeth, and appear in very much the same order, the lower central incisors appearing before the upper, the upper lateral incisors before the lower, the upper bicuspids before the lower.

As these teeth approach the surface, absorption begins in the alveoli and at the roots of the deciduous teeth, and this continues until the teeth are loosened and readily extracted, or, if this be not done, until little is left but their crowns.

When the first and second molars approach the surface, the gums, just as in primary dentition, become red, swollen, rounded, and tender. The salivary secretion is increased, the mouth is hot, the patient complains of aching in the gum, and, on account of tenderness, refuses food requiring mastication. With the other sets there is a gradual loosening of the superimposed temporary teeth, pain on mastication, redness and tumefaction of the gum, and augmented flow of saliva. As there is no impairment of the general health, these trifling symptoms must be regarded merely as manifestations of the progress of a physiological process. Such are the normal manifestations.

The most common disorders of second dentition are (*a*) those of the mouth and throat; (*b*) of general nutrition; (*c*) of the stomach and intestinal canal; (*d*) of the cervical lymphatic glands; (*e*) of the eyes; (*f*) of the ears; (*g*) of the skin; (*h*) of the respiratory tract; and (*i*) of the nervous system.

a. Oral pain is often intense. It is lancinating or neuralgic in character, and may either be limited to the position of the advancing tooth or extend throughout the upper and lower jaws,—the region supplied by the dental branches of the trifacial nerve. Sometimes the pain is referred to the eye, the ear, the face, or even to the forehead. Pain associated with tenderness most frequently attends the eruption of the first molars; then there is also redness and marked swelling of the gum, as in primary dentition.

The redness and swelling about an advancing tooth, or around a loosened milk tooth, may, in debilitated or strumous subjects, extend to the mucous membrane of the whole mouth and give rise to catarrhal stomatitis. Again, as one of the first or second molars advances, the mucous mem-

brane of the gum, directly over the tooth, breaks down, and a circular ulcer is formed. This ulcer possesses all the characteristics of the marginal ulcer of ulcerative stomatitis, and is very liable—provided such favoring conditions as scrofula and bad hygiene exist—to run around the alveolar border and extend to the inside of the cheek. A case has recently been under my care in which all of the six-year molars were cut in this way, the resulting ulcerative stomatitis producing considerable discomfort, but yielding readily to treatment.

Superficial ulcers upon the edges and tip of the tongue are often encountered. These ulcers correspond in position and number to loosened and, perhaps, decaying deciduous teeth; are due to constant irritation of the mucous membrane; are the seat of moderate pain, and more or less interfere with the movements of the organ in mastication and speech. They vary in shape and size, but are generally oval, with the greater diameter—rarely more than half an inch—extending in the direction of the axis of the tongue. Their bases are smooth, red, and shining, and their edges red, indented, somewhat indurated, and surrounded by a narrow band of white fur formed upon the neighboring healthy epithelium.

A boy, 10 years old, was recently brought to consult me about the condition of his tongue. Nearly two months before, the anterior deciduous molars had commenced to loosen. Soon after, two ulcers appeared upon the tongue at points corresponding to the loose teeth in the lower jaw. These caused considerable discomfort and interfered with the movements of his tongue. Six weeks later the four loose teeth were extracted. At the time of his visit the points of the permanent teeth were distinctly visible. The ulcers, which presented the characteristics already described, were present too, but they were much contracted and evidently in process of healing. This case is a clear illustration of the etiology of the condition, and of the rapid effect of the removal of the cause.

Loss or perversion of taste, depending upon reflected irritation of the gustatory and glosso-pharyngeal nerves, has occasionally arisen in my experience. It is a feature that may be readily overlooked in childhood, and without doubt has never received due credit as a cause of the anorexia so often observed during second dentition.

Of throat affections, simple hypertrophy of the tonsils and follicular tonsillitis seem particularly apt to arise in late childhood. The extension of catarrhal inflammation from the mouth to the throat is certainly an element in the causation of the conditions, though anorexia, imperfect digestion, and fever are more potent, as they lead to impaired nutrition and increased susceptibility to the action of cold and bad hygienic surroundings.

The treatment of this class of affections must vary with the symptoms presented. Should there be much inflammation and pain about a loose tooth, great relief can be obtained by painting the gum three or four times daily with a solution of—

℞ Cocain. hydrochlorat., gr. iv;
Glycerinæ, f℥ii;
Aquæ, q. s., ad f℥i. M.
Sig.—For local use.

When the first or second molars cause the trouble, free lancing, with an oblique crucial incision, is to be recommended. Much good can also be done in the way of softening the gums and lessening pain by a thorough application of—

℞ Zinci chloridi, gr. i;
Vin. opii, f℥i;
Glycerinæ, f℥ii;
Aquæ rosæ, q. s., ad f℥i. M.
Sig.—Apply to tender gums with a brush or soft cloth thrice daily.

Such measures, too, will be more successful in relieving referred pains than any direct application to the place of reference.

Catarrhal and ulcerative stomatitis demand the usual methods of treatment.

Superficial ulcers on the tongue can often be healed by a daily application of a solution of nitrate of silver (ten grains to one fluidounce), and the frequent use of a borax or chlorate of potassium wash (fifteen grains of either to one fluidounce). Should there be much pain and discomfort, the solution of cocaine recommended above may be used two or three times daily. When the deciduous teeth are decayed, however, nothing short of their extraction will cure the ulceration.

Nothing can be done for loss or perversion of taste except removing loose teeth and freely lancing the gum over advancing molars.

Hypertrophy of the tonsils and follicular tonsillitis must be treated in the same way as when they occur independently of dentition, the question of the propriety of extraction and of lancing being always borne in mind.

b. After safely passing through primary dentition, children usually grow robust and enjoy good health, unless they be attacked by some one of the acute contagious diseases to which their age is liable. This state of affairs may happily endure throughout the remainder of childhood, but it is often supplanted, during the sixth and following years, by a condition best described as one of "general debility."

This ill-health is neither produced by disease of important viscera, as of the lungs, heart, kidneys, and digestive organs, nor can bad hygiene be blamed in many cases. For the explanation one must look rather to an impairment of nutrition, resulting from the constitutional strain of cutting the second teeth, from the moderate fever associated with the process, and from the diminished consumption of food, attending oral discomfort, and painful mastication. The severity of the symptoms depends somewhat upon the general vigor of the subject attacked, though, in my experience, it bears little or no relation to the difficulty or ease of cutting the milk teeth.

Early in the sixth year, children so affected begin to lose their rosy cheeks; the lips grow pale; the skin of the body becomes sallow and harsh; the hair dry and lustreless; and there is moderate loss of flesh, with flabbiness of the muscles. The face wears an anxious expression, and the temper is unstable; by day frequent complaints of weariness are made, and little interest is taken in play, while at night sleep is restless, and there is often slight fever, with a temperature rarely above 100° F. Pain and discomfort in the mouth are constant symptoms, and, as these are increased by mastication, there is apparent anorexia. Examination of the mouth reveals redness, swelling, and tenderness of the gums over advancing molars, or, if these have been cut, around loose temporary teeth. The bowels are inclined to constipation, and the urine limpid and voided in abundant quantity; the pulse is rather feeble, though normal in frequency, and, as a rule, there is no cough nor other alteration in the respiratory function. Careful investigation shows an absence of lesion in the heart, lungs, or kidneys, and of disease of the abdominal glands or digestive tract. As the teeth of the advancing group are cut, the symptoms disappear, to return with the approach of each succeeding group, but the anterior molars generally give rise to more marked disturbance than any of the teeth that replace the temporary set.

In addition to the ordinary risk of intercurrent disease, existing in every case of general debility, the condition just described is very apt to be complicated by bronchitis or catarrh of the gastro-intestinal canal. Pyrexia, although it is comparatively slight in second dentition, accounts for this, for a feverish child is very susceptible to cold, and very liable to have his digestion disordered by food upon which he has previously thriven. The first cause, by driving the blood from the surface, produces bronchitis; the second, by direct and indirect irritation, leads to catarrh of the mucous membrane of the stomach and bowels.

This knowledge, taken in connection with the course and history of the case and the condition of the mouth, should enable the observer to attribute the illness to its proper source rather than to any complicating affection, although the latter undoubtedly accentuates the symptoms, and may force itself into prominence. The negative results of physical exploration of the heart, lungs, and abdominal organs,—particularly the mesenteric glands,—and of examination of the urine, are also important in establishing the correct relations of cause and effect.

Careful regulation of the diet and the administration of tonics, the methods of treatment that would naturally be suggested, are of little avail, unless oral pain and difficulty in mastication be relieved. Even then it is often impossible to do more than maintain a moderate degree of health until advancing teeth are completely free.

Free lancing of the gums over molars, the application of cocaine to painful gums surrounding loose temporary teeth, the extraction of these when the substituting teeth are so advanced as to run no risk of impairing the arch of the jaw, regulation of the diet and hygiene, and the employment of tonics and laxatives are the measures to be recommended. The diet must be simple, non-farinaceous, and nutritious; it is better to allow four small meals a day than three large ones. Of tonics, a good formula is—

℞ Tr. nucis vomicæ, ♏xii;
Elix. cinchon. ferrat., ʒvi;
Syrupi, ʒss;
Aquæ, q. s., ad ʒiii. M.

Sig.—Two teaspoonfuls thrice daily at the age of six years.

Syrup of the iodide of iron, bitter wine of iron, and an emulsion of cod-liver oil, with lacto-phosphate of lime, are also very useful. The best laxatives are fluid extract of senna,

brane of the gum, directly over the tooth, breaks down, and a circular ulcer is formed. This ulcer possesses all the characteristics of the marginal ulcer of ulcerative stomatitis, and is very liable—provided such favoring conditions as scrofula and bad hygiene exist—to run around the alveolar border and extend to the inside of the cheek. A case has recently been under my care in which all of the six-year molars were cut in this way, the resulting ulcerative stomatitis producing considerable discomfort, but yielding readily to treatment.

Superficial ulcers upon the edges and tip of the tongue are often encountered. These ulcers correspond in position and number to loosened and, perhaps, decaying deciduous teeth; are due to constant irritation of the mucous membrane; are the seat of moderate pain, and more or less interfere with the movements of the organ in mastication and speech. They vary in shape and size, but are generally oval, with the greater diameter—rarely more than half an inch—extending in the direction of the axis of the tongue. Their bases are smooth, red, and shining, and their edges red, indented, somewhat indurated, and surrounded by a narrow band of white fur formed upon the neighboring healthy epithelium.

A boy, 10 years old, was recently brought to consult me about the condition of his tongue. Nearly two months before, the anterior deciduous molars had commenced to loosen. Soon after, two ulcers appeared upon the tongue at points corresponding to the loose teeth in the lower jaw. These caused considerable discomfort and interfered with the movements of his tongue. Six weeks later the four loose teeth were extracted. At the time of his visit the points of the permanent teeth were distinctly visible. The ulcers, which presented the characteristics already described, were present too, but they were much contracted and evidently in process of healing. This case is a clear illustration of the etiology of the condition, and of the rapid effect of the removal of the cause.

Loss or perversion of taste, depending upon reflected irritation of the gustatory and glosso-pharyngeal nerves, has occasionally arisen in my experience. It is a feature that may be readily overlooked in childhood, and without doubt has never received due credit as a cause of the anorexia so often observed during second dentition.

Of throat affections, simple hypertrophy of the tonsils and follicular tonsillitis seem particularly apt to arise in late childhood. The extension of catarrhal inflammation from the mouth to the throat is certainly an element in the causation of the conditions, though anorexia, imperfect digestion, and fever are more potent, as they lead to impaired nutrition and increased susceptibility to the action of cold and bad hygienic surroundings.

The treatment of this class of affections must vary with the symptoms presented. Should there be much inflammation and pain about a loose tooth, great relief can be obtained by painting the gum three or four times daily with a solution of—

℞ Cocain. hydrochlorat., gr. iv;
Glycerinæ, f℥ii;
Aquæ, q. s., ad f℥i. M.
Sig.—For local use.

When the first or second molars cause the trouble, free lancing, with an oblique crucial incision, is to be recommended. Much good can also be done in the way of softening the gums and lessening pain by a thorough application of—

℞ Zinci chloridi, gr. i;
Vin. opii, f℥i;
Glycerinæ, f℥ii;
Aquæ rosæ, q. s., ad f℥i. M.
Sig.—Apply to tender gums with a brush or soft cloth thrice daily.

Such measures, too, will be more successful in relieving referred pains than any direct application to the place of reference.

Catarrhal and ulcerative stomatitis demand the usual methods of treatment.

Superficial ulcers on the tongue can often be healed by a daily application of a solution of nitrate of silver (ten grains to one fluidounce), and the frequent use of a borax or chlorate of potassium wash (fifteen grains of either to one fluidounce). Should there be much pain and discomfort, the solution of cocaine recommended above may be used two or three times daily. When the deciduous teeth are decayed, however, nothing short of their extraction will cure the ulceration.

Nothing can be done for loss or perversion of taste except removing loose teeth and freely lancing the gum over advancing molars.

Hypertrophy of the tonsils and follicular tonsillitis must be treated in the same way as when they occur independently of dentition, the question of the propriety of extraction and of lancing being always borne in mind.

b. After safely passing through primary dentition, children usually grow robust and enjoy good health, unless they be attacked by some one of the acute contagious diseases to which their age is liable. This state of affairs may happily endure throughout the remainder of childhood, but it is often supplanted, during the sixth and following years, by a condition best described as one of "general debility."

This ill-health is neither produced by disease of important viscera, as of the lungs, heart, kidneys, and digestive organs, nor can bad hygiene be blamed in many cases. For the explanation one must look rather to an impairment of nutrition, resulting from the constitutional strain of cutting the second teeth, from the moderate fever associated with the process, and from the diminished consumption of food, attending oral discomfort, and painful mastication. The severity of the symptoms depends somewhat upon the general vigor of the subject attacked, though, in my experience, it bears little or no relation to the difficulty or ease of cutting the milk teeth.

Early in the sixth year, children so affected begin to lose their rosy cheeks; the lips grow pale; the skin of the body becomes sallow and harsh; the hair dry and lustreless; and there is moderate loss of flesh, with flabbiness of the muscles. The face wears an anxious expression, and the temper is unstable; by day frequent complaints of weariness are made, and little interest is taken in play, while at night sleep is restless, and there is often slight fever, with a temperature rarely above 100° F. Pain and discomfort in the mouth are constant symptoms, and, as these are increased by mastication, there is apparent anorexia. Examination of the mouth reveals redness, swelling, and tenderness of the gums over advancing molars, or, if these have been cut, around loose temporary teeth. The bowels are inclined to constipation, and the urine limpid and voided in abundant quantity; the pulse is rather feeble, though normal in frequency, and, as a rule, there is no cough nor other alteration in the respiratory function. Careful investigation shows an absence of lesion in the heart, lungs, or kidneys, and of disease of the abdominal glands or digestive tract. As the teeth of the advancing group are cut, the symptoms disappear, to return with the approach of each succeeding group, but the anterior molars generally give rise to more marked disturbance than any of the teeth that replace the temporary set.

In addition to the ordinary risk of intercurrent disease, existing in every case of general debility, the condition just described is very apt to be complicated by bronchitis or catarrh of the gastro-intestinal canal. Pyrexia, although it is comparatively slight in second dentition, accounts for this, for a feverish child is very susceptible to cold, and very liable to have his digestion disordered by food upon which he has previously thriven. The first cause, by driving the blood from the surface, produces bronchitis; the second, by direct and indirect irritation, leads to catarrh of the mucous membrane of the stomach and bowels.

This knowledge, taken in connection with the course and history of the case and the condition of the mouth, should enable the observer to attribute the illness to its proper source rather than to any complicating affection, although the latter undoubtedly accentuates the symptoms, and may force itself into prominence. The negative results of physical exploration of the heart, lungs, and abdominal organs,—particularly the mesenteric glands,—and of examination of the urine, are also important in establishing the correct relations of cause and effect.

Careful regulation of the diet and the administration of tonics, the methods of treatment that would naturally be suggested, are of little avail, unless oral pain and difficulty in mastication be relieved. Even then it is often impossible to do more than maintain a moderate degree of health until advancing teeth are completely free.

Free lancing of the gums over molars, the application of cocaine to painful gums surrounding loose temporary teeth, the extraction of these when the substituting teeth are so advanced as to run no risk of impairing the arch of the jaw, regulation of the diet and hygiene, and the employment of tonics and laxatives are the measures to be recommended. The diet must be simple, non-farinaceous, and nutritious; it is better to allow four small meals a day than three large ones. Of tonics, a good formula is—

℞ Tr. nucis vomicæ, ♏xii;
Elix. cinchon. ferrat., f℥vi;
Syrupi, f℥ss;
Aquæ, q. s., ad f℥iii. M.

Sig.—Two teaspoonfuls thrice daily at the age of six years.

Syrup of the iodide of iron, bitter wine of iron, and an emulsion of cod-liver oil, with lacto-phosphate of lime, are also very useful. The best laxatives are fluid extract of senna,

which may be combined with the tonic mixtures; tincture of aloes and myrrh in small doses three times daily, compound licorice powder, gluten suppositories, or laxative tamarinds.*

Complicating bronchitis and catarrh of the gastro-intestinal canal demand active attention and little else can be accomplished until they are relieved.

c. Disorders of the digestive system, while unattended by such marked symptoms, and rarely reaching the same degree of danger as in primary dentition, are among the most common of the disturbances produced by the eruption of the second teeth. One cause of this is the intimate sympathy existing between the different portions of the digestive tract, and leading to reflection of irritation from point to point. Another and more active cause has already been indicated. It involves two conditions. First, general depression of vitality, — from constitutional strain, fever, and so on,—with a corresponding weakening of the function of digestion, so that food previously suitable and easily assimilated becomes relatively too coarse and "strong;" and, being more or less imperfectly changed and absorbed, lies in the alimentary canal undergoing fermentation and decomposition with the formation of irritant acids and gases. Second, the well-recognized susceptibility of the gastro-intestinal mucous membrane to become inflamed, or to assume the catarrhal state, when subjected to the action of irritants. A susceptibility decided enough under the best of circumstances, but intensely marked if the general health and resisting power be below par.

Anorexia, vomiting, acute gastric catarrh, chronic gastro-intestinal catarrh, and diarrhœa are the more common of the digestive disorders attending second dentition. Loss of appetite, when not due to perversion of taste, generally forms but one member of a group of symptoms depending upon catarrh of the stomach, and can be best studied under this head. The same may be said of vomiting. Of each of these symptoms it is also true that they may be so prominent as to mask the associated features unless the observer be very careful.

Acute gastric catarrh, in so far as it is related to second dentition, is most frequently encountered during the eruption of the six-year molars. The attack of so-called "biliousness" and "indigestion," may or may not be preceded by some indiscretion in diet. Very often, without any departure from ordinary rules, the mother notices that her charge becomes listless, has a hot, dry skin, loses appetite, is thirsty, complains of headache, abdominal discomfort, and nausea, and sleeps uneasily. Soon there is vomiting of sour-smelling, imperfectly-digested food, followed by painful retching, with the expulsion of small quantities of bile-stained mucus. Next the tongue becomes covered with a thick, yellowish-white fur, and the breath has a heavy, sour odor. There is decided elevation of temperature (99° to 101° Fahrenheit); the pulse is increased in frequency (110 to 120); the bowels are confined and the urine diminished in quantity, and lateritious. Tenderness of the epigastrium is generally noticeable. The attack may terminate suddenly, at the end of twenty-four hours, with several loose fæcal evacuations, or convalescence may extend over a period of three or four days; the fever gradually subsiding, nausea and thirst disappearing, the tongue clearing, and appetite returning.

The temporarily-enforced fast and the light diet indicated for a few days after such an attack insure immunity from future trouble for a short time, but as long as the molars are working their way through the gum, an error in diet, or even a return to ordinary food, may occasion a relapse. It will fully repay the physician to inspect the mouth of every six-year old patient (and upward) suffering from acute indigestion, and, after making the examination thoroughly, to lance swollen gums over advancing molars, and apply soothing lotions to irritated gums about loosened temporary teeth, or order extraction if admissible. General treatment must be conducted on the same plan as when the attacks, as is often the case, occur independently of dentition. The important points are careful regulation of the diet, or the withholding in bad cases of all food for twenty-four hours; counter-irritation to the epigastrium by sinapisms; the use of ice and iced Vichy water to relieve thirst, and the employment of remedies calculated to check nausea, and at the same time act gently on the bowels. A favorite method with the writer is to divide the elements of a Seidlitz powder into equal parts, say eight for a child of six years, dissolve a portion from each in a tablespoonful of cool water, pour together, add cracked ice, and administer while effervescing.

* See Starr's "Diseases of Digestive Organs in Children," page 211.

The well-known combination of calomel and soda is also very efficient, for instance:

℞ Hydrarg. chloridi mit., gr. i;
Sodii bicarb., gr. vi;
Sacchari, gr. xxx.
M. et ft. chart. No. vi.

Sig.—One powder every two hours until all are taken, or until the bowels act freely.

It is difficult to display too much caution in returning to a full diet, and, in spite of the protestations of parents, extreme moderation should be the rule until local irritation be relieved.

Chronic gastro-intestinal catarrh owes its origin to second dentition more frequently than to any other cause save whooping-cough. In this condition—so aptly termed by Eustace Smith "Mucous Diseases"—there is a mucous flux from the whole internal surface of the alimentary canal, which mechanically interferes with the digestion and absorption of food and greatly impedes nutrition. It may be met with at any time during the eruption of the permanent teeth.

The affected child is emaciated and weak. His face is pale, though subject to marked changes in color. At times a circumscribed crimson flush appears on one or both cheeks. Again, there is so much pallor, particularly about the lips, that fainting seems imminent. The eyes are surrounded by bluish circles, that deepen when the face pales; the conjunctivæ are muddy, and there is occasional squinting. The skin is sallow, dry, and rough; the hair lustreless and faded. There is decided pallor of the oral mucous membrane; the tongue is flabby, indented by the teeth, and glazed; and the breath is heavy and fetid. The appetite in the beginning fails, then becomes capricious, and, finally, is almost insatiable. Eating is followed by a sensation of drowsiness, and by eructations of flatus and acid liquid.

Tympanitic distention of the belly and pain are always present. Pain may be general, when it amounts to little more than a sensation of soreness, or, more frequently, it is limited to the left hypochondrium, and then is stitch-like in character. Either variety may be constant or present only after meals; in the former case there is a temporary increase of discomfort after eating. Paroxysms of severe pain about the umbilicus, with great pallor of the face, are sometimes observed.

Constipation of the bowels is usual, and the evacuations, which take place at intervals of two or three days, are scanty, and composed of small, hard, dark-colored lumps, with a quantity of mucus. By day the patient suffers from headache; is languid and ill-tempered. At night he is restless, grinds his teeth, starts from sleep in terror caused by frightful dreams, screams or laughs incoherently, and for a time seems unconscious of his surroundings. Somnambulism and nocturnal incontinence of urine are quite common.

There is no alteration of the temperature, the pulse is feeble, and there is frequently a slight, dry, hacking cough, unquestionably due to reflex irritation of the larynx. The urine is diminished during the continuance of severe pains, but is voided in large quantities at the termination of the paroxysms.

At intervals of two or three weeks, violent vomiting and purging occur. During these attacks, which last from one to three days, a large quantity of mucus is expelled; there is slight fever; and the tongue becomes less flabby, more pointed, and covered with a thick, white, feathery fur, except along the sides, where several smooth, red, glazed patches of variable size and shape, with irregularly-indented margins, appear. The cleaning-out process is followed by temporary improvement, but the symptoms slowly return and grow worse, to culminate in another attack.

The course of mucous diseases is very protracted, extending over months, and, while there is no regular progression, the symptoms tend to grow more and more severe as time lapses.

Hacking cough, emaciation, and debility may suggest tuberculosis. A diagnosis, however, can be readily made by noting the state of the tongue; the mucous stools; the color and condition of the skin; the absence of pyrexia, except in the attacks of vomiting and purging; the periodicity of these attacks; the diurnal drowsiness and nocturnal terrors, and the irregularity of the course. At the same time, the onset of the symptoms, after the commencement of second dentition, is a point of importance.

Mucous disease is not dangerous in itself, though, by reducing the strength, it predisposes to other and much more fatal diseases.

After removing oral irritation so far as possible, there are several rules of management to be enforced. First, all articles of diet that readily undergo fermentation must be withheld, and food should be given in moderate quantities and at shorter intervals than in

health, so that, while the stomach is at no time overdistended, enough nourishment may be ingested. Of permissible articles, milk, eggs, and lean meat are the chief, though fresh fish, raw oysters, cauliflower tops, spinach, asparagus, lettuce, and stewed celery can be used without ill-effect. With such a list to select from, it is an easy matter to write out a suitable dietary, and to make changes sufficiently often to avoid cloying the appetite by monotony. Filtered water or Vichy should constitute the drink, except there be great debility, when whiskey or old dry sherry are useful; they must be well diluted and given in carefully-proportioned doses with the meals.

Next, the activity of the skin must be maintained by general baths, followed by inunctions of olive oil, and by keeping the surface carefully covered with woollen underclothing. Finally, exercise in the open air on suitable days in winter, and an almost complete outdoor life in summer, greatly favor recovery.

Medicinal treatment is of minor import, but by no means to be neglected. The indications are to check the secretion of mucus; to neutralize the irritating acids formed by fermentation of the food; to restore the mucous membrane to a normal condition, thereby improving secretion, digestion, and appetite; and to secure regular action of the bowels and the expulsion of collected mucus and fæces. These ends accomplished, strength and health return, though it may be necessary to call in the aid of tonics.

Alkalies are the best remedies to check the secretion of mucus, and to liquefy it so that it may the more readily be removed. They are also most efficient in neutralizing the acid products of fermentation. Simple bitters, too, have some power in lessening the formation of mucus, and considerable influence in arresting fermentation; at the same time they give tone to the mucous membrane, and stimulate digestion. Laxatives keep the bowels clear. Of the first class, bicarbonate of sodium; of the second, gentian and columbo; and of the third, senna or aloes are to be preferred.

A very serviceable prescription is—

℞ Potassii iodidi, gr. vi;*
Sodii bicarbonatis, ʒi;
Extract sennæ fld., fʒiii;
Inf. calumbæ, q. s., ad fʒiii. M.

Sig.—Two teaspoonfuls three times daily before eating, for a child of six years.

* The iodide of potassium is used to increase the activity of the salivary and gastro-intestinal glands.

After food, it is well to order from ten to twenty drops of tincture of aloes and myrrh in a little water, for its powerful tonic action on the intestinal mucous membrane. Should tonics be needed in the after treatment, tincture of nux vomica and ferrated elixir of cinchona are the best. In order to prevent a relapse, mixed diet must be avoided for at least two months after convalescence is fully established, and, to confirm the cure, a change of air, by a trip to the mountains or seashore, is advisable.

Diarrhœa is a very constant attendant upon second dentition. It is most apt to arise in the changeable weather of spring and autumn or in the heat of July, August, or September. In this respect it resembles the diarrhœa so common with primary dentition; but, unlike the latter, it shows little or no tendency to run into entero-colitis. Two forms are met with,—namely, catarrhal diarrhœa and lientary. Catarrhal diarrhœa is accompanied by slight furring of the tongue, loss of appetite, and abdominal pain of a colicky nature. The evacuations are frequent, light yellow in color, and offensive, semisolid, or liquid. For the relief of these cases, all that is required, beyond attention to the mouth, is a bland diet, perhaps a dose of castor oil, and some mild astringent mixture. For example, let the patient take for breakfast a soft-boiled egg, milk with lime-water, and stale, dry bread; for dinner, some meat broth (free from fat), stale, dry bread, and rice and milk pudding; for supper, milk, and stale, dry bread. After the dose of oil, to be given when pain is marked, a good astringent mixture is—

℞ Tr. opii deod., ♏xii;
Bismuth. subnitratis, ʒi;
Syrupi, fʒss;
Mist. cretæ, q. s., ad fʒiii. M.

Sig.—Two teaspoonfuls every two hours.

The treatment may terminate with a course of wine of pepsin, or of pepsin with dilute muriatic acid.

Lientary depends upon great irritability of the intestine and exaggerated peristalsis. The stools are limited to four or five a day, and are composed of almost completely undigested food and mucus. An evacuation occurs in the morning, soon after rising; the others during or immediately after meals. They are preceded by griping pain, and by so urgent a desire that the little sufferer has difficulty in waiting for the chamber or reaching the closet. Nux vomica, followed by

arsenic, are the remedies to be employed. For instance, until the stools become less frequent and urgent, and the griping pain diminishes, a good prescription is—

℞ Tr. opii deod.,
Tr. nucis. vom., aa ♏xlviii;
Aq. menth. pip., q. s., ad f℥iii. M.
Sig.—One teaspoonful before each meal, at the age of six years.

Afterwards—

℞ Liquor. potassii arsenitis, f℥i;
Inf. gentianæ comp., q. s., ad f℥iii. M.
Sig.—One teaspoonful after each meal.

Of course, the diet must at the same time be carefully regulated.

The general depression produced by the coming of the second teeth would naturally favor the development of any constitutional tendency, and, having traced the connection in several instances, I have no doubt that not a few cases of tubercular ulceration of the bowels owe something to this etiological factor.

d. Enlargement of the submaxillary gland, and one or more of the lymphatic glands of the neck, is a frequent occurrence during the approach of the first molars. Patients so affected may at the same time present other evidences of difficult dentition; for example, they often show the symptoms of "general debility" already referred to, and often have mucous disease, but they are quite as frequently perfectly healthy in constitution as strumous.

The swelling of the gland or glands is moderate in degree; there is considerable hardness, moderate tenderness, and pain, but the superimposed skin is movable and healthy. There is some tendency to chronic enlargement and induration, though little or none to suppuration, save in scrofulous subjects.

Should the gums be thoroughly lanced,—and it is often necessary to sink the knife-blade deep to free the coming tooth,—the glandular swelling soon subsides, though resolution can be hastened by painting with tincture of iodine, or using the following ointment:

℞ Ichthyol, ℥i;
Lanolin, ℥i. M.
Sig.—Apply to the enlarged glands three times daily, with rubbing.

e and *f.* Conjunctival blennorrhœa and otitis, sometimes noticed during primary dentition, have come within my observation, but, from the intimate connection between the nerves of the ear and eye and those of the teeth, it is more than probable that certain other disturbances of these two organs of special sense arise during second dentition and depend upon dental irritation. Unfortunately, so few cases of disease of these two organs come under my notice, and so little attention has been paid to this causal relation by specialists, that I have no data upon which to base conclusions.

g. Herpes of the lips, eczema, and urticaria frequently appear during the eruption of the second teeth. They apparently depend upon gastro-intestinal disturbances, and are relieved by measures directed to the cure of disorders of this tract, together with appropriate local treatment, and attention to the teeth and gums.

h. Nasal catarrh, "teething cough," and an increased susceptibility to catarrh of the bronchial mucous membrane are the chief affections of the respiratory tract.

Nasal catarrh is generally subacute in type, and is attended by hypertrophy and redness of the Schneiderian membrane. There is a more or less copious discharge, which has a slight, heavy odor, may be composed of thin mucus or of muco-pus, and which sometimes dries into thick crusts. This catarrh occasionally runs into ozæna in weak and strumous children.

Attention to the teeth, frequent syringing of the nostrils, with insufflation of boracic acid and bismuth (1 part to 2), the occasional application of a weak solution of nitrate of silver (gr. v to f℥i), judicious use of the electro-cautery, and the administration of tonics, constitute the best treatment for the ordinary form of catarrh. Ozæna calls for its special plan of management. "Teething cough" is due to reflex irritation of the pneumogastric nerve; it is identical with the "stomach cough" of mucous disease. Bronchitis can never be said to be due directly to dentition. This cause acts only indirectly, by reducing general vitality and the power of resisting disease, and thus rendering the delicate bronchial mucous membrane more than ordinarily susceptible to catarrhal inflammation from chilling of the surface and exposure to damp air. An attack of bronchitis may occur with the eruption of one group of permanent teeth, or the attack may be repeated with several successive sets.

I have in my mind now the case of a delicate boy, who, in spite of the utmost care on the part of his mother, had a most severe

bronchitis during the eruption of the six-year molars, and a second persistent attack while the four central incisors were pushing their way through. Not two months before writing this, he again came under my care, suffering from a third attack that promised equal obstinacy. On inspecting the mouth, the four lateral temporary incisors were found to be loose, and their permanent substitutes evidently advancing rapidly. Extraction of the loose teeth was ordered, together with a mild expectorant and a tonic mixture, and the catarrh soon subsided.

i. Nervous disorders, both sensory and motor, are encountered.

Headache is common. The pain is usually temporal and unilateral. It may be seated, however, in the occipital region, or in different parts of the face, and sometimes shifts suddenly from the temporal to the occipital region. It is lancinating, more or less constant, with no distinct intermissions, and during its continuance there is restlessness, anorexia, a frequent, hard pulse, sweating, dilatation of the pupil on the affected side, and, perhaps, dimness of vision, diplopia, and colored or uncolored spectra. One or more painful points can often be detected, and generally there is a hard, tender, moderately-enlarged lymphatic gland in the submaxillary or cervical region.

These attacks are due to disordered vaso-motor innervation, depending upon irritation of the sympathetic nerves, and producing irregular contraction or spasm of the vessels,—the temporal or occipital artery, as the case may be. The real source of irritation is to be found in the mouth. The mode of action may be twofold. First, from a swollen gum or carious tooth, the lymphatic vessels readily convey irritating matter to a neighboring lymph gland, and the irritation here excited acts, in its turn, as a disturber of the sympathetic nerves, which furnish the vaso-motor supply to the carotid artery and its branches. This theory of the production of migraine has the value of the support of T. Lauder Brunton.

The other method of production—and this I simply submit for consideration—is one of direct nervous connection, the submaxillary ganglion acting in the case of the lower teeth and the spheno-palatine in the upper, as the medium of transfer of irritation to the vaso-motor nerves.

Bromo-caffeine, gelsemium, saline laxatives, and tonics may be employed to lessen the severity of the pain, but lancing, extraction, or proper "filling" are the only certain remedial measures.

The motor disturbances, while not quite as common as the sensory, are more varied. Reflex spasm and paralysis of the eyelid have been noted.* The former I have frequently seen, but the latter, so far as I can recall, has never fallen within my experience. For the reflex spasms no method of treatment availed until the dental irritation was removed, and the same statement may be hazarded *a priori* in regard to paralysis of the lid.

More extended paralysis also occurs. In this connection I can do no better than quote the words of Brunton, the correctness of which I can fully confirm. After speaking of paralysis of the eyelid, this author states: "Sometimes, however, paralysis occurs of a much more extensive character, in consequence of dental irritation, especially in children. Teething is recognized by Romberg and Henoch† as a frequent cause of paralysis, appearing in children without any apparent cause.‡ According to Fliess, paralysis of this sort occurs more commonly during the period of the second dentition, whereas convulsions generally occur during the first. Its onset is sudden. The child is apparently in good health, but at night it sleeps restlessly and is a little feverish. Next morning the arm, or, more rarely, the leg, is paralyzed. The arm drops; it is warm but swollen, and of a reddish-blue color. It is quite immovable, but the child suffers little or no pain. Not unfrequently paralysis is preceded by choreic movements. Sometimes recovery is rapid, but at other times the limb atrophies, and the paralysis may become associated with symptoms indicating more extensive disturbance of the spinal cord and brain, such as difficulty of breathing, asthma, palpitation, distortion of the face, and squint, ending in coma and death.

It is only in very rare instances that we are able to gain any insight into the pathological anatomy of such cases, because they rarely prove fatal, and even when they do so, the secondary changes are generally so considerable as to leave one in doubt as to the exact mode of commencement. This renders all the more valuable the case recorded by Fliess, in which a boy, 5 years old, and apparently quite healthy, found his left arm

* Brunton.

† *Klinische Wahrnehmungen und Beobachtungen.*

‡ Fliess, *Journ. der Kinderkr.*, 1849, July and August.

completely paralyzed on awaking one morning after a restless night. The arm was red, but the boy suffered no pain, and played about without paying much attention to the arm. The same day he fell from a wagon upon his head, and died in a few hours. Apart from the fracture of the skull, which caused his death, the anatomical appearances which were found were congestion of the spinal cord, and great reddening and congestion of the meninges near the point of origin of the brachial nerves, where the veins were also much fuller than on the corresponding right side. There was no organic change perceptible, either in the spinal cord or in the brachial nerves. On the other hand, the turgescence of the veins extended from the shoulder and neck up to the face, and was very striking in the submaxillary region.

This vascular congestion seems to point to vaso-motor disturbance of a somewhat similar kind to that which we have already noticed in connection with occipital headache, or with migraine, accompanied by subjective appearance of either form or color.*

This form of paralysis certainly suggests acute anterior poliomyelitis, though the symptoms are not quite identical, and the age is not that at which "infantile palsy" usually occurs.

Unfortunately, in all but the mildest cases, which get well quickly, when the paralysis appears the mischief is done, and little benefit can be expected from attention to the teeth. The treatment must be conducted on the plan usually adopted in infantile paralysis.

As just stated, dental irritation sometimes produces choreic movements as prodromata of paralysis, but it much oftener acts as the exciting cause of genuine chorea in nervous children. Approaching molars, or carious, loose milk teeth about to be shed, may be the source of irritation. The causal relation is proved by the fact that the chorea disappears or yields quickly to ordinary treatment when the new teeth pierce the gums or are freed by lancing, or when decaying teeth are removed. Epilepsy is another nervous affection which can occasionally be traced to the same source. In such cases one usually finds a history of repeated general convulsions during primary dentition.

1820 S. Rittenhouse Square.

* Brunton, "Disorders of Digestion," p. 93.

ON THE TREATMENT OF PUERPERAL HEMORRHAGES.

By E. P. Hurd, M.D., Newburyport, Mass.

By puerperal hemorrhages are understood the hemorrhages of the first six months of pregnancy which generally terminate in abortion; hemorrhages occurring during the last three months, whether "accidental" or due to placenta prævia; hemorrhages during labor, and secondary hemorrhages coming on after labor; in other words, all hemorrhages occurring during pregnancy, parturition, and the puerperal state.

THE HEMORRHAGES OF ABORTION.

Considering the immense losses of blood attending abortions, it is a wonder that so few women die. I have never seen any statistics giving the mortality from abortion, but I am certain that very few women die from hemorrhage alone. In a practice of twenty-five years, I have never seen a fatal case of the kind. In the first few months of pregnancy, bleeding from a detached placenta is easily controlled by tamponading and the free use of ergot; the alert physician is generally master of the situation. But where the unfortunate patient is alone and cannot have the help of a physician, her life is fearfully in jeopardy. An instance of this kind constitutes the basic fact in a criminal abortion case, which threatened to be the subject of a trial before the Superior Court in this district; it has really been put off from court to court for several years. This woman, who was in a weak state of health and a multipara, actually flowed to death before delivery of the placenta. No physician was summoned, and nothing was done to save the poor woman's life till the case had become hopeless. The autopsy showed the placenta to be loose in the uterus. The verdict of the medical examiner was "death from hemorrhage."

In the treatment of threatened abortion, the first question to ask is, Can the hemorrhage be arrested without terminating the pregnancy? If the flowing be but trifling, if the os be undilated, if labor has not commenced, there may be hope that no irreparable mischief has been done to the vessels of the utero-placental circulation. It is even possible that the hemorrhage may be due to active hyperæmia of the uterine mucosa, and not to rupture of the placental connections. This consideration gives warrant for temporizing, or what some of our late therapeu-

tic leaders would call "armed expectancy." "Time, rest, and opium," says the American editor of Churchill's "Midwifery." Rest, which is indicated in all kinds of hemorrhage, is especially needful in puerperal forms, for reasons which are sufficiently obvious; and opium to calm nervous excitement and lessen uterine action is indispensable; ergot is hardly admissible on account of its ecbolic action.

I am sure that I have more than once seen hemorrhage checked, and the woman enabled to go on to her full time, by putting the patient to bed on the supervention of a not very profuse flowing, giving 25 drops of laudanum, and applying cloths wrung out of ice-water to the vulva and pubes. It is, however, seldom that one is so fortunate. The flowing is a sign of irremediable separation of the placenta,—of death of the fœtus, of the fatal coming on of labor. When, then, the physician is convinced that all efforts to quiet uterine action and save the life of the fœtus are in vain, he will, if the hemorrhage continues, if the os and cervix be not open, plug the vagina and give ergot.

The method of tamponading which I have followed is that advocated by most obstetrical authorities. The patient is placed on her side or in the lithotomy position; a speculum (preferably a Sims) is introduced, and the vagina is thoroughly packed with pledgets of cotton; a string may be attached to these wads, kite-tail fashion, to facilitate extraction. It is, I think, a good plan to soak in strong vinegar the cotton pledgets that are to be applied to the os; some beneficial styptic effect is thus obtained. The vagina should not be merely filled, it should be thoroughly packed, or the tampon will do no good, and on arriving at the vulva, dry cotton wads should be inserted. A few compresses should be placed over this, and the whole kept firmly *in situ* by a T-bandage.

As for the material of the tampon, cotton-wool is probably the best. Dewes recommends a sponge. Siefort once snatched an apron from one of his nurses and crowded it into the vagina. On one occasion I used cotton cloth, torn into strips, and well packed into the vaginal culs-de-sac. Whatever substance may be used for tamponading, after twelve hours the plug should be removed, when the os will generally be found dilated and the fœtus in reach; at least, such has been my experience. With the extraction of the fœtus and placenta, all danger from hemorrhage is generally past.

In some cases it will be necessary to renew the tamponading, the vagina having been previously well washed out with a hot sublimate solution (hydrarg. chlorid. corrosiv., 1 part; water, 2000). If, after waiting another twelve hours, and removing the tampon, the ovum is still retained, and the patient is free from septic fever and alarming hemorrhage, what is to be done? It will be prudent to suspend all active interference, to give ergot, and await the expulsion of the fœtus by the uterine contractions. If, however, any urgency in the symptoms should contraindicate any such delay, forcible dilatation of the cervix should be effected, and the ovum extracted by digital manœuvres, if possible, or by blunt hook or forceps. In one instance, I was able to effect this extraction by the aid of a dull curette. The placenta will generally give the most trouble; the practitioner is seldom fortunate enough to get it away at one sweep with the ovum; it may remain behind on account of pretty firm attachment to the walls of the uterus. In such cases, I have frequently found it advisable to wait till, by the natural efforts, the after-birth had become separated from the uterus; intrauterine antiseptic carbolic or sublimate douches being frequently given to prevent septic accidents. In one instance, where septic absorption had really taken place, as evinced by chills and a temperature of 105° F., I was obliged to delay twenty-four hours before I could remove all the secundines. The uterus was douched every twelve hours with a two and a half per cent. carbolic solution (a Molesworth intrauterine syringe being used), and a 10-grain iodoform-pencil was carried after each douching up to the fundus and left there. The douche of itself has a powerful effect in aiding the removal of the secundines. It is needless to say that sometimes thorough artificial dilatation of the cervix, and the free use of the curette is indicated. This point has been much insisted upon by recent gynæcological writers, though I believe that the occasions are fewer where curetting is called for than some would lead us to think. It is really only exceptionally that the practitioner will feel himself obliged to use the curette in the treatment of abortion. By thorough antiseptic cleansings of the uterine cavity, and the use of iodoform-pencils, the case can generally be safely left to nature.

Before finishing what I have to say under this head, I must refer to several of the standard remedies in threatened abortion. One is venesection. This was advised by the old

authorities; Churchill recommends it. I am sure that plethoric cases, where blood-letting seems called for, or is justifiable, will be very few indeed.

Another prophylactic agent is *black haw*, the *Viburnum prunifolium*, in teaspoonful doses every two hours. Grandin, in Charpentier's "Obstetrics" (American edition), speaks favorably of this remedy. Bruce, in a communication to the Obstetrical Society of Edinburgh, extols chlorate of potassium in scruple doses *ter die:* and Picinilly is said to have known of several cases in which the chlorate has been successfully used with women who ordinarily failed to reach their full term.* Churchill recommends the tincture of Indian hemp, in 4- to 6-drop doses, every two, four, or six hours. It would, however, seem, from Dr. Christison's observations, that this drug is decidedly ecbolic in its action, increasing uterine contraction, and shortening the intervals between the pains.†

With regard to the use of cold applications externally in abortions, Lusk condemns them. Damp cloths and other cold applications over the abdomen are too depressing; besides, the blood is driven inward. Despite this fiat of so high an authority, many physicians will persist in having faith in ice and in ice-cold applications, the immediate effect of which is to contract the local blood-vessels and favor coagulation. I am sure that I have sometimes seemed to gain time—to promote the formation of clots in bleeding vessels, to markedly lessen the hemorrhage and the danger—by applying pieces of ice wrapped in a napkin to the vulva and lower part of the abdomen. The ice is kept constantly *in situ* for an hour or two: by that time the danger is often over.

As a substitute for the vaginal tampon, in grave cases of hemorrhage that cannot be controlled by rest, ergot, and external cold, Skene recommends tamponading the cervix uteri. He places a compress on the vulva, securing it by an ordinary T-bandage. If this fails to keep the bleeding within the bounds of safety, he then tampons the cervix. This is done, either by using a sponge tent, or by crowding an ordinary piece of sponge into the cervix with the uterine dressing-forceps. The hydrostatic dilators fulfil the indication even better still. The advantages of the cervical tampon over the vaginal, according to Dr. Skene, are these: the cervical can be introduced and removed through the speculum with the greatest facility, and without much pain to the patient. It more thoroughly controls the hemorrhage, and does not cause vesical and rectal tenesmus. It does not cause decomposition to the same extent. It helps to dilate the cervix, which is desirable; and by damming back the blood into the uterus, it separates the attachments of the fœtal membranes from the uterine walls. In using the hydrostatic dilator, the water in the dilator should be increased from time to time, so that it may rather more than keep pace with the dilatation of the cervix.‡

When the os is well dilated, a manipulation, first recommended by Hoening and endorsed by Dr. Paul F. Mundé (*Med. Record*, 1875, p. 87), is sometimes efficacious. Two fingers of one hand are introduced into the vagina, and passed as far up as possible into the fornix vaginæ; the other hand grasps the uterus through the abdominal parietes, and firmly compresses the organ between the fingers of both hands, slowly expelling its contents.

When the ovum and secundines are removed, all danger from hemorrhage may be considered as over. A hot sublimate douche (115° F.) may be indicated, both for a hæmostatic and antiseptic effect. I have generally found it necessary to administer such a vaginal douche night and morning for the first few days.

THE HEMORRHAGES OF PLACENTA PRÆVIA.

The following four cases of placenta prævia were furnished me by two leading physicians of Newburyport. In a practice of twenty-five years I have never been so unfortunate as to meet with a case. My experience in this respect has been like that of most of my colleagues in this city.

Case I. was communicated by Dr. J. J. Healy:

"Have had several severe cases in a practice of rather more than sixteen years. My average of obstetric cases for years has been fully two a week. Have been always successful in my cases of placenta prævia. The first thing to do when you are in presence of a patient who is flooding, in consequence of this puerperal anomaly, is to effect forcible delivery. If the os is not dilated, perform

* *Gaz. Méd. de Paris*, December, 1874; *Med. Rec.*, April 17, 1875.

† Stillé's "Therapeutics and Materia Medica," article "Cannabis."

‡ *Medical Record*, January 16, 1875, p. 60.

tic leaders would call "armed expectancy." "Time, rest, and opium," says the American editor of Churchill's "Midwifery." Rest, which is indicated in all kinds of hemorrhage, is especially needful in puerperal forms, for reasons which are sufficiently obvious; and opium to calm nervous excitement and lessen uterine action is indispensable; ergot is hardly admissible on account of its ecbolic action.

I am sure that I have more than once seen hemorrhage checked, and the woman enabled to go on to her full time, by putting the patient to bed on the supervention of a not very profuse flowing, giving 25 drops of laudanum, and applying cloths wrung out of ice-water to the vulva and pubes. It is, however, seldom that one is so fortunate. The flowing is a sign of irremediable separation of the placenta,—of death of the fœtus, of the fatal coming on of labor. When, then, the physician is convinced that all efforts to quiet uterine action and save the life of the fœtus are in vain, he will, if the hemorrhage continues, if the os and cervix be not open, plug the vagina and give ergot.

The method of tamponading which I have followed is that advocated by most obstetrical authorities. The patient is placed on her side or in the lithotomy position; a speculum (preferably a Sims) is introduced, and the vagina is thoroughly packed with pledgets of cotton; a string may be attached to these wads, kite-tail fashion, to facilitate extraction. It is, I think, a good plan to soak in strong vinegar the cotton pledgets that are to be applied to the os; some beneficial styptic effect is thus obtained. The vagina should not be merely filled, it should be thoroughly packed, or the tampon will do no good, and on arriving at the vulva, dry cotton wads should be inserted. A few compresses should be placed over this, and the whole kept firmly *in situ* by a T-bandage.

As for the material of the tampon, cotton-wool is probably the best. Dewes recommends a sponge. Siefort once snatched an apron from one of his nurses and crowded it into the vagina. On one occasion I used cotton cloth, torn into strips, and well packed into the vaginal culs-de-sac. Whatever substance may be used for tamponading, after twelve hours the plug should be removed, when the os will generally be found dilated and the fœtus in reach; at least, such has been my experience. With the extraction of the fœtus and placenta, all danger from hemorrhage is generally past.

In some cases it will be necessary to renew the tamponading, the vagina having been previously well washed out with a hot sublimate solution (hydrarg. chlorid. corrosiv., 1 part; water, 2000). If, after waiting another twelve hours, and removing the tampon, the ovum is still retained, and the patient is free from septic fever and alarming hemorrhage, what is to be done? It will be prudent to suspend all active interference, to give ergot, and await the expulsion of the fœtus by the uterine contractions. If, however, any urgency in the symptoms should contraindicate any such delay, forcible dilatation of the cervix should be effected, and the ovum extracted by digital manœuvres, if possible, or by blunt hook or forceps. In one instance, I was able to effect this extraction by the aid of a dull curette. The placenta will generally give the most trouble; the practitioner is seldom fortunate enough to get it away at one sweep with the ovum; it may remain behind on account of pretty firm attachment to the walls of the uterus. In such cases, I have frequently found it advisable to wait till, by the natural efforts, the after-birth had become separated from the uterus; intrauterine antiseptic carbolic or sublimate douches being frequently given to prevent septic accidents. In one instance, where septic absorption had really taken place, as evinced by chills and a temperature of 105° F., I was obliged to delay twenty-four hours before I could remove all the secundines. The uterus was douched every twelve hours with a two and a half per cent. carbolic solution (a Molesworth intrauterine syringe being used), and a 10-grain iodoform-pencil was carried after each douching up to the fundus and left there. The douche of itself has a powerful effect in aiding the removal of the secundines. It is needless to say that sometimes thorough artificial dilatation of the cervix, and the free use of the curette is indicated. This point has been much insisted upon by recent gynæcological writers, though I believe that the occasions are fewer where curetting is called for than some would lead us to think. It is really only exceptionally that the practitioner will feel himself obliged to use the curette in the treatment of abortion. By thorough antiseptic cleansings of the uterine cavity, and the use of iodoform-pencils, the case can generally be safely left to nature.

Before finishing what I have to say under this head, I must refer to several of the standard remedies in threatened abortion. One is venesection. This was advised by the old

authorities; Churchill recommends it. I am sure that plethoric cases, where blood-letting seems called for, or is justifiable, will be very few indeed.

Another prophylactic agent is *black haw*, the *Viburnum prunifolium*, in teaspoonful doses every two hours. Grandin, in Charpentier's "Obstetrics" (American edition), speaks favorably of this remedy. Bruce, in a communication to the Obstetrical Society of Edinburgh, extols chlorate of potassium in scruple doses *ter die:* and Picinilly is said to have known of several cases in which the chlorate has been successfully used with women who ordinarily failed to reach their full term.* Churchill recommends the tincture of Indian hemp, in 4- to 6-drop doses, every two, four, or six hours. It would, however, seem, from Dr. Christison's observations, that this drug is decidedly ecbolic in its action, increasing uterine contraction, and shortening the intervals between the pains.†

With regard to the use of cold applications externally in abortions, Lusk condemns them. Damp cloths and other cold applications over the abdomen are too depressing; besides, the blood is driven inward. Despite this fiat of so high an authority, many physicians will persist in having faith in ice and in ice-cold applications, the immediate effect of which is to contract the local blood-vessels and favor coagulation. I am sure that I have sometimes seemed to gain time—to promote the formation of clots in bleeding vessels, to markedly lessen the hemorrhage and the danger—by applying pieces of ice wrapped in a napkin to the vulva and lower part of the abdomen. The ice is kept constantly *in situ* for an hour or two: by that time the danger is often over.

As a substitute for the vaginal tampon, in grave cases of hemorrhage that cannot be controlled by rest, ergot, and external cold, Skene recommends tamponading the cervix uteri. He places a compress on the vulva, securing it by an ordinary T-bandage. If this fails to keep the bleeding within the bounds of safety, he then tampons the cervix. This is done, either by using a sponge tent, or by crowding an ordinary piece of sponge into the cervix with the uterine dressing-forceps. The hydrostatic dilators fulfil the indication even better still. The advantages of the cervical tampon over the vaginal, according to Dr. Skene, are these: the cervical can be introduced and removed through the speculum with the greatest facility, and without much pain to the patient. It more thoroughly controls the hemorrhage, and does not cause vesical and rectal tenesmus. It does not cause decomposition to the same extent. It helps to dilate the cervix, which is desirable; and by damming back the blood into the uterus, it separates the attachments of the fœtal membranes from the uterine walls. In using the hydrostatic dilator, the water in the dilator should be increased from time to time, so that it may rather more than keep pace with the dilatation of the cervix.‡

When the os is well dilated, a manipulation, first recommended by Hoening and endorsed by Dr. Paul F. Mundé (*Med. Record*, 1875, p. 87), is sometimes efficacious. Two fingers of one hand are introduced into the vagina, and passed as far up as possible into the fornix vaginæ; the other hand grasps the uterus through the abdominal parietes, and firmly compresses the organ between the fingers of both hands, slowly expelling its contents.

When the ovum and secundines are removed, all danger from hemorrhage may be considered as over. A hot sublimate douche (115° F.) may be indicated, both for a hæmostatic and antiseptic effect. I have generally found it necessary to administer such a vaginal douche night and morning for the first few days.

THE HEMORRHAGES OF PLACENTA PRÆVIA.

The following four cases of placenta prævia were furnished me by two leading physicians of Newburyport. In a practice of twenty-five years I have never been so unfortunate as to meet with a case. My experience in this respect has been like that of most of my colleagues in this city.

Case I. was communicated by Dr. J. J. Healy:

"Have had several severe cases in a practice of rather more than sixteen years. My average of obstetric cases for years has been fully two a week. Have been always successful in my cases of placenta prævia. The first thing to do when you are in presence of a patient who is flooding, in consequence of this puerperal anomaly, is to effect forcible delivery. If the os is not dilated, perform

* *Gaz. Méd. de Paris*, December, 1874; *Med. Rec.*, April 17, 1875.

† Stillé's "Therapeutics and Materia Medica," article "Cannabis."

‡ *Medical Record*, January 16, 1875, p. 60.

manual dilatation, use Barnes's bags, anything that will enable you to get your hand into the womb; push to one side the placenta, or get your hand by it as best you can, find the feet, and perform version. My cases have all been treated in a manner very similar in detail to the following, which had some complications that were peculiar, and was certainly as desperate as any case with which I have had to deal.

"January 20, 1890, was summoned to attend Mrs. A. B., of Byfield, multipara, eight and a half months pregnant; was reported as not in labor, but as flooding. From 1 P.M. till my arrival at 4.30 P.M. had been flowing at intervals; the loss of blood was great; there were pools of blood on the floor, and the bedclothes were saturated.

"Mrs. B. had had several previous slight attacks of flowing.

"On making examination, I found the vagina full of clots. The os was dilated and dilatable. I removed all the clots; inserted two fingers into the os and cervix. I felt what seemed to be a large, firm clot, that I could not start. This I soon found to be the placenta, centrally implanted.

"The patient was nearly moribund from loss of blood; pulse small and filiform.

"On the right side I found the placenta partially detached from its site; I was enabled to insert my hand. The patient became violent and maniacal; I was obliged to desist, and to forcibly etherize her. Then I passed my hand into the uterus, and found the head presenting. I passed up my hand by the head, felt a foot, and brought it down; there was no difficulty in completing version, and delivering the woman of a dead child. Then I removed the placenta. The woman was cold and pulseless for two hours afterwards. I gave hypodermic injections of ether and brandy, and injected ergot; I also gave ergot by mouth. Finally, after I had given up all hope, the patient rallied, and made a slow but good recovery."

The three following cases were communicated by Dr. F. A. Howe, of this city.

"CASE I.—*Placenta Prævia; Central Implantation of Placenta; Hemorrhage; Tamponment of the Vagina, then Delivery by Version.*—Mrs. Geo. L.; second pregnancy; did not nurse first child. After first confinement menstruated once, at second month. At fifth month of gestation had a somewhat free flow. This did not occur again till about the sixth and a half month; was then very severe. By digital examination the placenta was found nearly central over the internal os. At th time of examination there was no flowing Patient being quite a distance from me, arranged that, on the recurrence of hemor rhage, Dr. Snow, who was near at hand should be notified by the same messenge sent for me. Everything remained quiet fo two weeks, and patient had rallied wel Suddenly, in the night, flowing returned Dr. Snow was summoned, as arranged, an when I reached the patient half an hou later I found the vagina well tamponed and no external flowing apparent. I re moved the tampon, introduced my hand separated the placenta, one edge of whic was readily reached, ruptured the mem branes, caught a foot, and easily turned an delivered a still-born child, the placenta fol lowing speedily, with comparatively little los of blood. But a small amount of ether wa given. Patient rallied fairly well for th time being, with no further bleeding, but die at the end of three weeks from general debil ity. There was no enlargement of the mam mary glands; no secretion of milk. Had th patient completed her full term of pregnancy the child would have been born eleven month after first confinement.

"CASE II.—*Placenta Prævia Centralis.*—Mrs. P. M.; Salisbury; patient of Dr. Dear born; called in consultation; primipara; nat urally of feeble constitution; seventh mont of gestation; had had several slight hemor rhages; none serious till the early mornin in consequence of which I was summoned Found patient somewhat exsanguinous, puls very feeble, and general exhaustion very grave Examination revealed the placenta presentin in advance of the vertex; a margin of pla centa was easily reached by the finger. A little ether, preceded by a full dose of brandy was administered, and the os rapidly dilated and a still-born child delivered by version Placenta was at once detached, and promp contraction of the womb secured. Very lit tle blood was lost after the introduction o the hand for version, but patient survive only twenty-four hours. In this case, I think the early loss of blood was greater than th attending physician was aware of, althoug the patient was very feeble during her entir gestation.

"CASE III.—*Central Implantation of Pla centa; Hemorrhage at Seventh Month, render ing Patient Moribund; Delivery by Version Recovery.*—Mrs. T., a poor, hard-workin woman; multipara. A week prior to con finement had a few discharges of blood, last

ing but a few minutes. When I saw her there was no flowing, and the general condition of patient was good. On examination, I found the placenta apparently centrally located over the os uteri. Enjoined absolute rest and nutritious diet, and requested to be summoned immediately (the patient lived very near my own residence) upon recurrence of bleeding. Four nights subsequently, in the midst of one of the severest rain and sleet storms I was ever obliged to face, the messenger came for me, and in a few moments I was at the bedside, to find my patient reduced to the last degree of exhaustion, and the bed full of blood. At the moment bleeding had ceased. While waiting for the patient to rally a little under the influence of active stimulants, by the mouth and hypodermically, a messenger was sent for Dr. H. F. Adams, who promptly responded. Meanwhile, no flowing had returned. Easily dilating the relaxed cervix, as I introduced my hand into the womb, the placenta escaped into the vagina. Delivery of a dead child by version was speedily accomplished, without much further loss of blood, although the patient was in a condition of alarming syncope. Besides hypodermic injections of brandy and ergot, freely administered by Dr. Adams, nitrite of amyl was given by inhalation with most gratifying results. Patient rallied slowly, and for several days remained in a critical condition, but finally made a good recovery, and is now in the enjoyment of robust health."

For the following case I am indebted to Dr. G. W. Jones, of Cambridgeport, Mass.:

"PLACENTA PRÆVIA PARTIALIS.

"On May 20, 1889, I was summoned to Mrs. P., a colored woman, aged 26 years, multipara, six and a half months advanced in pregnancy. The trouble was uterine hemorrhage, which had continued for ten days. It began by being very slight and unattended by pain; latterly the flowing had become profuse and alarming. At my first visit I found her very weak and exsanguinous, unable to sit up in bed for more than five or ten minutes at a time without fainting; pulse regular, but weak; temperature normal; appetite poor. Vaginal examination revealed the os uteri soft and somewhat dilated; the finger-tip could be inserted into it; the left side of os and body of uterus had a very soft feel, while on the right side the uterus was hard and the os seemed to be stretching over some hard substance, evidently the fœtal head. Examination did not cause pain of any sort, but there was a steady oozing of blood, which was evidently draining away the life of my patient. I at once ordered tr. ferri chl., gtt. x; fluid extract of ergot, gtt. xxx; to be taken in water three times a day, the patient to continue in bed till I saw her again the next morning. On my next visit, I found the hemorrhage lessened; patient had rested well, and felt more encouraged. This improved condition continued for eight or nine days, when she informed me that the flowing had increased during the previous night, and that she had had some labor-pains. Examination showed the condition of the uterus before described, with the os a little more dilated. My finger could easily enter the internal os, where I detected the fœtal head pressed against the right side of the os; while on the left was the ragged edge and surface of the placenta, which was beginning to become detached; I could distinctly feel the fœtal head through it. Instantly recognizing the difficulty of the case I had to deal with, I tamponed the vagina to its fullest capacity, and ordered perfect rest and quiet. I did not remove the tampon for forty-eight hours, there being no appearance of hemorrhage; but on the morning of May 31, the eleventh day of my attendance, she complained of regular labor-pains, and, on removing the tampon, severe hemorrhage occurred, and the os uteri being dilated, so that I could introduce my two fingers, I resolved on speedy delivery. After some little difficulty I brought a foot down, and hurried the labor through as speedily as possible. In less than half an hour I had delivered the woman of the fœtus and placenta; the placenta was found to be attached near the left margin of the os uteri, with perhaps about half an inch covering the os internum, where the hemorrhage took place. The fœtus was evidently at about the seventh month of intrauterine life, and was a monstrosity, and lived for about half an hour. The after treatment did not differ essentially from that of an ordinary labor case, and the patient made a good recovery."

The method of treatment of placenta prævia most approved at the present day, as being the most rational, and saving far oftener the life of the mother and the child than the older methods, is that advocated by Braxton Hicks and Richard Lomer, and popularized by the latter in an article in the *American Journal of Obstetrics*, December, 1884. Hicks first recommended the combined external and internal mode of version,

which does not require that the whole hand shall be introduced into the uterus in the case of only partially dilated cervix, but only two fingers, the fœtus being so manipulated by one hand over the mother's abdomen as to be brought within the control of the accoucheur's other hand. Lomer endorses the method with additions of his own, and insists especially on the necessity of the utmost slowness and gentleness in making the tractions. The accoucheur, having got hold of one or both feet, should draw down during the pains. The hemorrhage can now be controlled, for the head and body of the child make the best possible tampon, and slow delivery prevents laceration of the cervix and perineum. Lomer does not think that it makes much difference, practically, whether the insertion of the placenta be central or lateral; in any event, it must be sufficiently separated from its attachments to allow two fingers or the whole hand to enter the uterus. In the case of cervical implantation, it may be necessary to perforate the placenta with the finger before version can be accomplished.

In case of rigidity of the os and cervix, Lomer favors the tampon as a preparatory measure, the vagina being thoroughly packed with charpie or wads of cotton, which may be left in from twelve to twenty-four hours. This tamponading will effectually control hemorrhage and give the os time to dilate.

There is a general consensus among all modern obstetricians that early delivery in placenta prævia (and the earlier the better after the diagnosis is made) is demanded. It is never best to let the woman go to her full term with the hope of saving both child and mother. It is not to be expected that many women will consent to artificial means for expediting delivery unless alarmed by flooding; but when hemorrhage sets in, there should be no more delay; the accoucheur should insist on conducting the case to a speedy termination.

ACCIDENTAL HEMORRHAGE.

I have never had but one serious case of accidental hemorrhage. One dark night in 1868 I was called into a country-place five miles from home to attend a French-Canadian woman, who was seized with hemorrhage when near her time of confinement. The history was this: She was drawing a pail of water from the well, when she missed her footing and fell heavily, striking her abdomen against the curb. She was immediately taken with flowing.

When I arrived at the house, I foun Mrs. B. already weak from the loss of bloo The flow was almost constant, though som what kept in check by the supervention c pains. There was quite severe pain ove the fundus uteri on the right side. The c was still rigid, though beginning to dilat With some difficulty I made out a head pre sentation; the existence of placenta prævi was excluded.

Finding that I could not at present effe delivery, I gave 60 drops of laudanum, an packed the vagina with cotton batting. Thi only temporarily controlled the bleeding, an in an hour I removed the tampon, with dis gust at the result. The os and cervix had however, become much softened, and wer now dilatable. I ruptured the bag of water and found the head engaging in the os, bu above the pelvis. Gave chloroform, and en deavored to apply long forceps. I could ge the forceps on and make them lock, but the would not hold, slipping when any consider able traction was made. I then laid the for ceps aside, introduced my hand into th uterus, passing by the presenting head, foun a foot, and turned. There was but littl more hemorrhage, for I soon delivered th woman of a dead child, and the after-birth followed in a few minutes. The uterus con tracted well under external pressure an ergot, and the patient made a good recovery

POST-PARTUM HEMORRHAGES.

Post-partum hemorrhages from retaine placenta are, and ought to be, rare. Th accoucheur waits a reasonable time,—fifteen minutes or half an hour. If the uterus doe not of itself expel the placenta, he extracts i by Credé's method, or some modification o that method. I have generally found tha firm grasping of the uterus through the abdo men and kneading with the fingers, while with the other hand gentle traction is made on the cord, is sufficient. In case of rather profuse flooding, Credé's method, in all its essential details, should be resorted to. Unless there are adhesions, the after-birth is easily delivered in this way, and firm uterine contraction obtained. In the event of adhesions, the case may present a serious aspect I have in my lifetime met with only two instances of what might properly be called adherent placenta. In one, the adhesions were only partial. I easily removed with the fingers (the whole hand being introduced into the womb) the greater portion of the placenta, but certain cotyledons belonging to th

central portion remained behind. The uterus was kept aseptic by suitable injections, and ergot was given. On the third day the remainder of the placental mass was expelled. In the other case, which happened twenty-two years ago, the whole placenta seemed attached as by fibrous bands, and I was unable to remove any portion of it. Masses eventually separated, sloughed off, and were expelled with clots; the putridity was excessive, and it is hardly necessary to say that the patient died from septicæmia.

POST PARTUM HEMORRHAGE FROM INERTIA OF THE UTERUS.

Under this head is included hemorrhage taking place after the placenta has been delivered. A considerable excess of flowing is not an uncommon thing, nor is this to be wondered at when we think of the extent of surface from which the placenta has just been torn by the uterine contractions, and the more or less patulous uterine sinuses. A good precautionary means, on which most obstetricians now insist, is the administration of a full dose of ergot just before the birth of the child. Some accoucheurs make a practice of standing over the patient, the left hand grasping the uterus through the abdominal walls, and keeping up firm compression, with frictions and kneading, for an hour, or even more. This practice, which is a good one in some cases, is really seldom necessary. A healthy woman, who has not been exhausted by her labor, will not be likely to flow too much. "The torn arterial twigs," says Lusk, "retract spontaneously, the patulous mouths of the veins become plugged with fibrinous clots, while the so-called venous sinuses, which are simply channels lined with endothelium, without valves or walls, become bent, flattened, and obliterated under the compression exerted by the muscular structures of the uterus." Sometimes, however, when we little expect it, the alarm comes, "Oh, doctor, I am flowing dreadfully!" Then is the time for prompt action. The head of the patient is to be lowered, and the foot of the bed to be raised. A hypodermic injection of fluid extract of ergot must be administered, and repeated in ten minutes. The uterus and vagina must be cleared of clots, and hot water—as hot as can be borne: 115° to 120° F.—must be injected into the uterine cavity. There is no fear of doing harm by intrauterine injections at these times, for the water will readily run back through the patulous os. Where a fountain syringe has not been at hand, I have frequently used the Davidson syringe with the long canula. It is well to have the terminal end closed, though I have not always taken even this precaution. Vinegar is a good styptic with which to medicate the water, and is generally at hand; use equal parts of strong vinegar and water. Playfair, Barnes, Chambers, Atthill, Steele, and others, recommend the perchloride of iron; three fluidounces of the tinctura ferri muriatis to a pint of water is Steele's formula.* On the other hand, writers have pointed out the dangers attending perchloride of iron injections, and Beck declares in the *Obstetrical Journal*, February, 1874, that he has known death to attend their use. Dr. Grailly Hewitt, during the discussion of Beck's paper at the Obstetrical Society, referred to a case in his own practice where death had followed the perchloride injection, probably from absorption of the styptic and consequent blood-poisoning. He prefers vinegar, 1 part to 2 or 3 of water, which, he thinks, can never be harmful. I believe that the use of the perchloride injections is to-day generally abandoned; at least, in this country.

Whether the water be medicated or not, a considerable quantity should be injected. In order fully to control the hemorrhage, it may be necessary to inject several gallons. Place the patient cross-wise in bed, with the hips drawn well over the edge. A rubber sheet under her protects the clothing and the bed, and conducts the water into a pail below. The water should be as hot as can comfortably be borne—115° to 118° F.—when poured into the fountain-bag. Dr. Fordyce Barker affirms that this treatment will always "positively, absolutely, and efficiently control uterine hemorrhage." His experience coincides with that of multitudes in the profession, who now rely on the hot-water injections. †

---

* Braithwaite's "Retrospect," Part LXVIII. pp. 229–235; Charpentier's "Obstetrics," Am. ed., p. 236; also Braithwaite, Part LXI. p. 201.

† In some hospitals (notably the Women's Hospital, Philadelphia) a Davidson's syringe is used in preference to a fountain syringe, "as an intermittent stream has been found more effectual in exciting contractions than a continuous stream." The canula is introduced to the fundus. The douche must be used at least twenty minutes at a time, and the water kept hot by continued addition of fresh supplies. The patient should be always on her back, with her hips higher than the rest of her body; the vagina thus keeps filled. (See a valuable article by Dr. Clifton Wing in the *Boston Medical and Surgical Journal*, June 17, 1880.)

The fear which the older obstetricians manifested in

Nevertheless, there are many who still pin their faith on cold applications,—ice over the pubes, ice in the vagina.* I recall to mind a very severe case that occurred in my practice in 1867; this was before the hot-water treatment had come into vogue. I was a long distance from my home, in the country; the patient was a multipara. After a somewhat tedious labor, marked by uterine inertia, I delivered the woman with forceps, under chloroform. The placenta was extracted without difficulty. There was at first but little flowing, and I was soon in my carriage on my way home, when I was called back on account of the supervention of flooding. I found the patient blanched and almost pulseless; the bedclothes were drenched with blood; blood was also standing in pools on the floor. I placed my hand over the abdomen and grasped the uterus; it was large, loose, and flabby. I injected ergot and kneaded the uterus; the hemorrhage continued. I poured cold water from a height upon the patient's abdomen, the left hand still grasping the uterus. This produced a shock, which at once contracted the womb and arrested the bleeding. When I ceased pouring the water, the hemorrhage returned. I was obliged to keep up this cold douching for more than hour; two men were constantly employed in bringing water from the nearest well, which was two hundred yards distant. I gave at the same time whiskey freely, several times injected ergot, and kept my patient covered with dry blankets everywhere except over the abdomen.† I believe that to this heroic treatment this woman owed her lif though, doubtless, the hot-water treatment, I had known of it, would have been even mo prompt and efficacious.

Faradization is an excellent means for a resting post-partum hemorrhage, when due t inertia of the uterus. Unfortunately, one do not always have a battery at hand. The littl pocket Gaiffe battery answers a very goo purpose. One electrode (an olive-shape bulb) should be inserted within the uteru and the other should be firmly pressed upo the fundus over the abdomen. A prett strong current should be used. "The e periments of Radford, Robert Barnes, an Mackenzie demonstrate that under its powe the uterus can be made to contract, eve when it resists the influence of what may b called the diastaltic remedies."‡

A recent editorial in the *London Lance* (January 25, 1890) calls attention to Dr Dührssen's "practically new treatment fo atonic post-partum hemorrhage."§ It con sists in tamponing the cavity of the uterus "The cervix is seized with one or two volsel læ and drawn down to the vulva, or the plug ging may be done through a duck-bill specu lum. The end of a gauze bandage is the seized with a long speculum forceps, the lef hand grasps the fundus uteri, and the end o the bandage is carried up to the fundus; th bandage [which is a continuous one] is the packed into the uterus bit by bit. The va gina is next packed in a similar manner, or if there is cervical bleeding, with tampons o cotton-wool. Care must be taken that th packing material is not defiled on its passag

reference to introducing the hand into the uterus for the purpose of arresting post-partum hemorrhage,—a practice which Dewes condemns as pernicious,—is hardly justifiable in these modern days of antiseptic midwifery, when the accoucheur is careful to render his hands thoroughly aseptic before attempting any obstetric manipulations.

* A writer in the *Medical Press* has recently called attention to the danger of ice in post-partum hemorrhage, as several cases in which the hemorrhage was checked by the introduction of pieces of ice into the uterus have been followed by symptoms of septicæmia. This fact, he says, taken in connection with the recent researches of Prudden as to the presence of living bacteria in ice, may, perhaps, point to direct septic infection from the use of ice.

The best *preventive* of post-partum hemorrhage, according to Jaggard, is to secure retraction of the uterus by keeping the hand on the fundus uteri from the moment the child begins to pass through the vulvar outlet until the muscular fibres have rearranged themselves,—about one hour after expulsion of the placenta.—*Transactions International Congress of Medicine*, September, 1887.

† In this connection, attention may appropriately be called to papers read before the American Gynæcological Society in 1878 by Drs. Wilson, of Baltimore, an Penrose, of Philadelphia, on the treatment of post-par tum hemorrhage. The former recommended the use o the hand as a curette to scrape the surface from whic the placenta had been detached, and the latter the in troduction of common vinegar into the cavity of th uterus on a piece of soft sponge or rag. At the state meeting of the New York Academy of Medicine, Feb ruary 5, 1880, Dr. Isaac E. Taylor advocated flagella tion of the child's back previous to its entire delivery as a means of preventing uterine hemorrhage, and flag ellation of the abdomen of the woman after delivery o the placenta as a substitute for the introduction of th hand into the cavity of the uterus. The flagellation o the child consisted in quick, not harsh, blows with the hand over the child's back after delivery of the shoul ders; and flagellation of the mother was performed after delivery of the placenta by powerful and frequently re peated strokes over the exposed abdomen with a towel doubled and the ends held in the hand, the doubled end being wet in ice-water.

‡ Charpentier, *loc. cit.*, vol. iii. p. 237.

§ *Volkmann's Sammlung Klin. Vorträge*, No. 347, 1889.

into the uterus; for, in the only fatal case from sepsis, the gauze bandage [which had previously been soaked in boiling-water] had been allowed to trail on the floor."

The best material "is a long, gauze bandage sterilized and soaked in five per cent. carbolic solution, or iodoform gauze; and, in default of this, strips of linen, sterilized as above, the vagina being packed with iodoform or salicylic wool." The plug is left *in situ* not longer than eight hours. Dr. Dührssen's cases are twenty-nine in number, many of which were exceedingly grave; there were six deaths, one from sepsis.

SECONDARY HEMORRHAGES.

These hemorrhages occur after delivery of the placenta and during the period of convalescence. They may be due to retention, through carelessness, of portions of the secundines; to laceration of the cervix (a severe case that occurred under my observation was of this kind); to a separation of thrombi at the placental site, or to a subinvolution. The latter is oftener the true cause.

In the treatment of these hemorrhages absolute rest in bed must be enjoined, and a thorough exploration of the uterine cavity should be made, and any foreign substance (polyp, shred of membrane, fibrinous clot, etc.) removed by the curette. The endometrium should be thoroughly cleansed by a hot-water injection, and medicated with Churchill's tincture of iodine, applied on a cotton-wrapped applicator. Any laceration of the cervix should be treated, if possible, by Emmet's method. Grandin advises argent. nit., ʒi to the ℥i to the erosion.* Ergot internally, with electricity and the daily use of the hot douche, will be required.

Mundé,† in a review of the causes of secondary hemorrhages, enumerates certain rare causes, such as hemophilia, functional disease of the liver, malarial poisoning, and disease of the endometrium. Here etiological considerations alone will suggest the appropriate treatment.

I have seen bad cases of secondary hemorrhage as the result of allowing the lying-in woman to sit up too soon after confinement. Rest in bed, with hot douches, and ergot and hydrastis (20 drops each of the fluid extract of ergot and tincture of hydrastis Canadensis three times a day) have been all the treatment required.

In two instances, I have known the heavy, flabby uterus to retrovert after parturition; this accident happened to the patient when sitting at stool. Severe flooding came on, which only ceased on reposition of the womb and the insertion of a Thomas pessary.

A CASE OF ACETANILIDE-POISONING.

By S. T. Armstrong, M.D., Ph.D.,
New Orleans, La.‡

WHILE it has been the experience of most physicians that have used acetanilide in their practice, that different individuals were differently affected by the same dose of that drug, yet, aside from the peculiar pallor, cyanosis of the lips, and occasionally a "sinking feeling," in some susceptible persons, toxic effects have been but rarely met with, or, if met with, have not been recorded.

I am familiar with but two cases of acetanilide-poisoning. The first, a case of Dr. Marechaux, reported in the Therapeutic Gazette of December, 1889, in which almost 4 grains of acetanilide were given by mistake to a child 5 months old. In two hours and a half the child was insensible, the eyes turned up, the skin blue. Pupils did not react to light; respiration superficial,—72; pulse imperceptible,—160 per minute; skin cold. A teaspoonful of Hungarian wine was given every hour, and the body was wrapped in a damp woollen cloth to favor perspiration. There was no retention of urine nor vomiting, and in twenty-four hours the child was well.

A second case is reported by Messrs. T. Jessopp Bokenham and E. Lloyd Jones in the *British Medical Journal*, February 8, 1890. A lady, aged 43, subject to migraine, was given monobromacetanilide .25 gramme (4 grs.) at 10.30 A.M., and the dose repeated at eleven because the headache had not improved. Her lips were then a little blue; but, as the headache did not improve, she took acetanilide, .5 gramme (7½ grs.), at 11.30 A.M., 12.15 P.M., and 1 P.M. She had a good appetite for lunch, was very much cyanosed, and felt "almost intoxicated and very giddy." She took some whiskey and lay down; her headache was worse; she had a sensation of suffocation; a pain started from the cardiac region to the left shoulder, and she lost consciousness. At five o'clock the pulse was 108, respirations 24,

* Charpentier, *loc. cit.* vol. iii. p. 248.

† Cited by Grandin in Charpentier.

‡ United States Marine Hospital Service.

temperature 99° F.; mental condition good. At 7 P.M. nitroglycerin, $\frac{1}{100}$ grain, was given, and the cyanosis increased. Alcohol, strychnine, and digitalis were then given, and the cyanosis diminished. Urine remained normal, and the patient was well in twenty-four hours. In this case thirty grains of acetanilide and its compound were taken.

The case that came under my observation was at the Lakeside Hospital, Cleveland, O. A healthy young seaman, aged 28, had been treated for hypertrophy of inguinal glands by extirpation. On November 25 he complained of pains in various portions of the body; and, as these increased in severity,—notwithstanding the fact that he was on antisyphilitic treatment,—on the morning of the 26th a prescription was written for antifebrin, ʒii, divided into eight powders, with directions that one powder should be taken every half hour until the headache, that was especially severe, ceased. While this was a careless way to write a prescription for this drug, it was expected that one, or, at least, two powders would afford relief; and eight powders were ordered because it was surmised that they would have to be continued daily until the specific action of the antisyphilitic medicine was obtained.

The nurse faithfully followed the directions, and, as the headache did not cease, the powders were given until eight o'clock, when the last was taken. At this time he was seen at the evening visit of the externe; the patient's skin was cold and blue; there were general symptoms of collapse; he had vomited freely; and in attempting to arise from his bed, fell to the floor unconscious. There was but slight muscular control; the heart's action was very rapid, but the pulse was not taken. Hot bottles were applied to the feet and legs, and whiskey was given by the mouth during the night. He did not sleep during the night, and the nausea continued until the next morning.

At the time of my ward visit, on the morning of the 27th, the patient felt very weak, the skin was moist, temperature 100.2° F., and pulse 130, compressible; his respiration was normal; the lips were still cyanosed, and the skin had a corpse-like appearance. His urine was normal. Milk-punch was given during the day, and by evening the patient felt as well as usual.

It would be impossible to state how much of the one hundred and twenty grains of acetanilide was absorbed by the stomach; but it is regarded as more than probable that the last few powders remained in the stomach, and were vomited. None of the vomited matter was saved or examined except by the nurse; it contained some of the food the patient had eaten for dinner and supper.

THE USE OF SANTAL OIL.

A paper in the *Wiener Medizinische Blätter*, for February 13, 1890, calls attention to the fact that the efficacy of specimens of santal oil is largely dependent upon the origin of the oil, whether obtained from the sandal wood from Zanzibar, Java or Australia. The Chinese appear to have been the first to recognize the properties of santal oil in arresting gonorrhœa, and for a long time they have refused to make use of any specimens except those derived from sandal wood from Mysore: the Hindus likewise use the oil of the wood obtained from this locality, and a number of papers have recently been published which seem to indicate that the antiblenorrhœic properties of the oil from this source is especially marked. Dr. Handerson, as quoted by the *Wiener Medizinische Blätter*, has used oil from this source and has obtained success where copaiba balsam and cubebs were perfectly inefficacious. Dr. Durand has also obtained success from the oil of sandal wood, no unfavorable after effects appearing upon the digestible tract. Dr. Candmont regards the oil of santal from Mysore as the most active remedy in acute inflammation of the bladder and states that he has succeeded in curing acute cases of gonorrhœa in three days. Gipoulon also publishes notes of cases of acute nephritis, of congestion of the kidneys with consecutive hæmaturia, relieved by doses of santal oil. While finally Posner in an address before the Medical Society of Berlin called attention to the good effects which he had obtained from the use of santal oil in the treatment of chronic gonorrhœa. Nevertheless in all instances the results obtained were in proportion to the purity of the preparation. It may be given in doses of about 3 drops in capsules in acute gonorrhœa, eight to twelve being given in a day, though in other affections three to six capsules would be sufficient. It is worthy of note that treatment should not stop immediately after the cessation of the discharge but should be continued for some time subsequently.

The Therapeutic Gazette

EDITED BY

ROBERT MEADE SMITH, A.M., M.D.,
Professor of Comparative Physiology, University of Pennsylvania,

PHILADELPHIA.

GEO. S. DAVIS,
Medical Publisher, Box 470,
DETROIT, MICH.

Philadelphia, 714 Filbert Street.

SUBSCRIPTION RATES FOR 1890.

(Journal increased to 72 pages each month.)

THERAPEUTIC GAZETTE (postage included).....$2.00
THERAPEUTIC GAZETTE with MEDICAL AGE..... 2.50
THERAPEUTIC GAZETTE with AMERICAN LANCET 3.25
THERAPEUTIC GAZETTE with AGE and LANCET... 4.00

Foreign subscriptions may be ordered through our agent in England, Mr. H. K. Lewis, Medical Publisher and Bookseller, 136 Gower Street, London. Price 10s. Remittances may be made either by Postal Order or Stamps.

Price to Foreign Subscribers direct (postage included), $2.50 (10 shillings). English postage stamps received on remittances.

Editorial communications should be addressed 332 South Twenty-first Street, Philadelphia. Articles intended for the Original Department of the GAZETTE will be accepted only with the understanding that they are contributed to it exclusively.

Business communications should be addressed to the Publishers.

Leading Articles.

ANTISEPTIC SURGERY IN GENERAL PRACTICE.

TO those of us who live in large cities, the use of antiseptics, both at the time of operation and in the after dressing of the cases, is a comparatively easy matter, for the materials required are generally kept on hand, or can be obtained in a few minutes from the nearest druggist's shop; but, on the other hand, to the practitioner in the country districts who may be called to see an urgent case when miles away from his office, their employment is a much more difficult matter. But, in spite of the manifold difficulties to be overcome under such circumstances, the remarkable results obtained by adherence to the principles, if not to all the details, of the antiseptic method of wound treatment is often surprising.

The tendency of the antiseptic method of wound treatment has been decidedly to simplification, the cumbersome spray apparatus has been almost generally abandoned, the disagreeable and in some cases dangerous solutions of carbolic acid have been superseded by irrigation with a solution of the bichloride of mercury 1 to 1000 to 1 to 4000; the preparation of the gauze has been much simplified; the detail which has held its place most steadfastly is that of thorough drainage.

We do not propose to consider the numerous materials which have been advocated by different surgeons in the last few years as valuable antiseptics, among which may be mentioned Mr. Lister's last preparation,—the so-called double cyanide of mercury and zinc,—but merely call attention to the one which, from its general use and the excellence of the results following its employment, has stood the test of time; we refer to the bichloride of mercury, used in a solution in strength from 1 to 1000 to 1 to 4000.

Many improvements have also been made in the construction of surgical instruments, with a view to the ease with which they can be rendered perfectly aseptic; such as the solid metal instruments nickle-plated, or made with aluminium handles, which admits of the instruments being placed in boiling water before being used, a procedure which is destructive to the ordinary instruments with wooden or bone handles.

But this we do not consider a matter of vital importance, if the surgeon has in mind the guiding principle of antiseptic surgery, and sees that the instruments are thoroughly cleaned after each operation, and are placed for a short time in a 1 in 20 carbolic solution before being used. With such precautions with the ordinary wooden-handled instruments, we constantly see cases which have been operated upon run a perfectly aseptic course, provided the surgeon has been caretaking in the other details of the operation and after-dressing of the case. At the expense of repeating what is generally known to most of our readers, we will detail the steps of an operation, as generally followed at the present time, and will then describe some modifications of the procedure which may be required for various reasons.

The part to be subjected to operation should be rubbed over with cotton saturated with spirits of turpentine to remove any oily material from the skin, and the part should then be well scrubbed with soap and water, and after this washed with a solution of bichloride of mercury 1 to 2000, and should be covered with a towel wet with the same solution if the operation is not immediately undertaken.

The hands of the operator should be washed in the same manner with spirits of turpentine, soap and water, and the bichloride solution, care being taken to see

that the region of the nails is thoroughly cleansed, and they should be immersed in the bichloride solution for a few moments immediately before the operation is begun.

The instruments, if solid metal ones are used, should be placed in a tray, and covered with boiling water, and allowed to remain for a short time before being placed in a 1 in 20 carbolic acid solution; if wooden-handled instruments be used, the immersion in boiling water has to be omitted, and they are simply washed and placed in the carbolic solution, and allowed to remain for fifteen or twenty minutes before being used. The region of the proposed operation should be covered with towels or lint wrung out in bichloride solution, care being taken that too large a surface of the patient's body be not brought in contact with the wet towels. During the operation the wound should be frequently irrigated with the mercuric solution, and this should be made as warm as the hands of the operator can comfortably bear, as the risk of chilling the patient and increasing the shock is much diminished, for the use of antiseptics, in spite of its many advantages, has not diminished the shock of operations.

The operation being completed, any bleeding vessels are secured by catgut ligatures, either the chromicized ligatures or those prepared in the oil of juniper, which have been soaked in the bichloride solution for fifteen or twenty minutes before being used: these are cut short in the wound.

The wound is next irrigated with the bichloride solution, and one or more perforated rubber drainage-tubes are introduced to the bottom of the wound and brought out at its most dependent portion, and secured by means of safety-pins.

The edges of the wound should then be approximated by sutures, either of chromicized catgut, silk, or silver-wire, the sutures being soaked for a time in the mercuric solution before being used.

The cavity of the wound should next be flushed with the bichloride solution, introduced through the drainage-tube by means of a syringe, and the surface of the wound and adjacent skin should be washed with the same solution.

The line of the wound is then freely dusted with powdered iodoform. This detail many surgeons of experience omit, and they consider that iodoform possesses feeble antiseptic powers; but when moistened by the dressings, or by the serum from the wound, its use is certainly of advantage. A piece of protective cut a little larger than the wound is next dipped in the bichloride solution, and laid over it, and this is covered by a good sized piece of bichloride or carbolized gauze composed of twelve or sixteen layers, soaked in a 1 in 2000 bichloride solution, and partially wrung out, and this in turn is covered by a large piece of dry gauze, of twelve or sixteen layers, covered by rubber tissue or mackintosh, or oiled-silk, or oiled-muslin; several layers of bichloride cotton are now applied over these dressings, and the whole dressing is held firmly in contact with the part by the application of a gauze bandage.

If there is no bleeding or leakage of serum through the dressing, and the patient's temperature is about normal, the dressings need not be disturbed for a week or ten days, and when they are removed, the surface of the wound should be irrigated with the bichloride solution. The cavity of the wound, if there be any, should be washed out through the drainage-tube, and the tube should then be removed or shortened, and the sutures should be removed if the wound is healed, or they may be allowed to remain until a subsequent dressing; the dressing should be reapplied in the same manner as at the primary dressing.

Although it is well to adhere to a system of operative detail and dressing, such as above given, yet it often happens that in certain emergencies the surgeon is not provided with the different dressings required, and under such circumstances he has to improvise dressings from the materials at hand, the use of which will often be followed by results in no way less satisfactory than those of the more elaborate method.

If the surgeon has with him the bichloride of mercury,—and since this material has been so conveniently put up in pellets almost every practitioner carries it with him,—he can make a solution of the required strength in a few moments.

The wound can then be irrigated with this solution, and, if catgut ligatures are not at hand, silk or linen thread may be soaked in the bichloride solution, first being thrown in boiling water for a few minutes; these may then be applied to the bleeding vessels and cut short in the wound, treated as catgut ligatures; horse-hair drains may be substituted for the rubber drainage-tubes, being first well washed and then soaked in the bichloride solution before being used.

Silk or linen sutures, which have been

washed as above described, may be used for the sutures to close the wound; and, if no prepared gauze be at hand, surgical lint or old muslin or linen which has first been soaked in boiling water, and then soaked for a few minutes in the bichloride solution may be employed, a number of layers being used, and this may be covered by a layer of oil-silk or waxed paper or ordinary brown paper, and the dressing may then be held in position by a muslin bandage.

In a case, for instance, of a compound fracture, and it is in such cases that the value of antiseptic dressings has been so markedly demonstrated, the results following their use have been a revelation to the surgeon, who remembers the course this class of injuries ran a few years ago. A wound of this nature is probably already infected by the dust of the atmosphere before the surgeon sees it; and if he has with him the means of preparing a solution of bichloride of mercury, he should remove any foreign matter and thoroughly irrigate the wound, reduce the fragments if there be displacement, provide for drainage, and apply some temporary dressing, such as above described, which may be retained for some hours, or even days, if the wound is running an aseptic course, until the materials for a more elaborate dressing are obtained. If the bichloride solution is wanting, the next best substitute is water which has been boiled, and it is to be used as warm as the hands of the surgeon can bear; this may be employed to irrigate the wound, and to soak the dressings which are to be used until a more permanent dressing is obtained. No judicious surgeon would think of waiting some hours to operate upon a case of strangulated hernia because he had not antiseptic solutions or dressings at hand, for in such cases time is so important an element of safety, that he would consult the best interests of his patient by an immediate operation, taking care to see that his hands and instruments were clean, and the wound was irrigated with boiled water and dressed as above described.

We cannot subscribe to the doctrine that unless we have the materials to use during the operation, and to apply a complete antiseptic dressing, we gain nothing, for by the use of such improvised dressings we have often seen such excellent results follow that we can only say, let the surgeon bear in mind the principle of the antiseptic method of wound treatment, and do the best with the materials at hand.

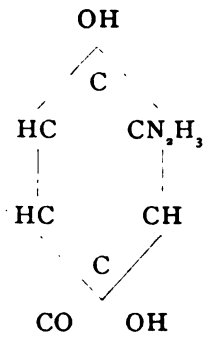
A NEW ANTIPYRETIC.

IT is very generally maintained that fever is dependent upon or, at any rate, associated with increased oxidation processes in the economy, and this hypothesis being admitted, the thought that some of the symptoms dependent upon the presence of fever would be most successfully treated by reducing agents is a natural consequence. More than this, examination of the modern synthetic antipyretics shows that they all contain an amide group combined with a larger and more complex molecule, and the supposition is again tenable that substances containing a double amide group, especially those in which the reducing power is highly developed, would likewise exercise a marked antipyretic effect. Unfortunately, however, most of the substances belonging to this category, such as hydrazin and its salts, although they possess extreme reducing power, are nevertheless extremely poisonous and especially destructive to the red blood corpuscles. This extreme toxicity of hydrazin and its salts has therefore prevented any effort to answer the question as to whether it possesses any antipyretic properties or not, and the attempt would, therefore, naturally suggest itself to combine hydrazin with the compounds which, while possessing antiseptic properties, are to a certain extent free from toxicity.

The first of these compounds which naturally suggests itself is phenylhydrazin, or a compound of hydrazin and carbolic acid, but unfortunately this has proved to be a powerful poison, splitting up the blood into its component parts, hydrazin and carbolic acid. Experiments with salts of this compound, such as hydrochlorate of phenylhydrazin, have nevertheless demonstrated the fact that they are possessed of marked antipyretic action, and experiments have, therefore, been made with the view of seeking compounds of hydrazin with more complex groups, such, for example, as occurs in acetyl-phenyl-hydrazin, which was first known as pyrodin, and later as hydracetin, and another substance known as antithermin; but even these, although possessing marked antipyretic properties, have nevertheless, in many instances, evoked serious symptoms as a consequence of the administration of comparatively small doses. Believing, however, that these experiments were made in the right direction, Professor Kobert has recently made a number of experiments, with the idea of replacing the poisonous phenyl group, as a compound with hydrazin, by the relatively

innocuous para-oxy-benzoic acid. With this object in view, therefore, Professor Kobert has made a number of experiments with a combination of hydrazin with para-oxy-benzoic acid, a compound which seems to be free from toxicity, and which the author describes under the name of orthin (*Deutsche Medizinische Wochenschrift*, 1890, No. 2, page 21).

The atomic organization of this body is represented by the formula



Orthin is an extremely unstable body, but the hydrochlorate of orthin, on the other hand, is a permanent compound, although even then the salt must be protected from light.

A freshly-prepared watery solution is colorless, and possesses extreme reducing power towards oxides of the heavy metals, immediately reducing Fehling's solution even in the cold. It also has considerable antiseptic powers. Professor Kobert has administered this substance to numerous animals, both warm-blooded and cold-blooded, and his results have shown that the hydrochlorate of orthin was not poisonous even in considerable doses; thus, 15 grains were given in one day to a dog weighing twenty-four pounds, and no anæmia, loss of appetite, or disturbance of the general health was to be detected. In all cases the urine of the animal acquired marked reducing power so that even in the cold it was able to reduce Fehling's solution.

The administration of 15 grains of the hydrochlorate of orthin to a goat was followed by the appearance of a considerable amount of sugar in the urine. Otherwise the animal seemed quite healthy and lost neither appetite nor liveliness. The reducing power of the urine was mainly due to a substance which could be removed by ether, but even afterwards a considerable quantity of grape-sugar remained which, however, did not ferment in the presence of orthin. Further, Kobert has found that in the proportion of 1 to 100,000 in the blood hydrochlorate of orthin produces marked vascular dilatation, but no alteratio whatever occurs in the blood which can b detected by microscopic or spectroscopic e amination, even when the proportion of th chlorohydrate is raised as high as 1 t 100,000.

At this point orthin was transferred b Professor Kobert to the hands of Professo Unvericht, who conducted a series of exper ments in the hospital of the University o Dorpat with the object of determining th antipyretic value of this substance.

Although Kobert's experiments seem t show that orthin might be administered i doses sufficiently large to manifest marke reducing influence and that the effects migh be retained for some time, clinical experimen by Professor Unvericht, reported in the sam number of *Deutsche Med. Wochenschrift*, go fa however, to remove the sanguine expectatio naturally occasioned by the reading of Profe sor Kobert's memoir. Professor Unverich has found that the administration of th hydrochlorate of orthin in the dose of 7½ grains, whether in typhoid fever, acute rheu matism, pneumonia, or scurvy, while possess ing antipyretic action it is yet extremely in sufficient, the slight advantages following it administration being more than compensate by the extreme disadvantages which atten its use, such as profuse sweating, collaps and sometimes more or less serious evidence of poisoning. The disheartening feature i the results obtained by Professor Unverich are in the extreme variability of the results for while in some cases 7½ grains were give without producing any effect whatever, i other cases 3 grains produced such marke depression as to indicate that the doses wer very excessive, and comparatively small dose in several instances produced most remarkabl and alarming oscillations of temperature In two cases, through mistake in the adminis tration of the remedy, 30 grains were give instead of 3 grains. In both cases there wa severe vomiting, although antipyretic an other toxic effects were wanting, probabl attributable to the fact that through emesi the economy was rapidly freed from th drug. Orthin was also tested as an anal gesic in rheumatism and neuralgia, but wa unsuccessful, in several cases marked chil following its administration. One case espe cially is worthy of notice, in which a medi cal student took only 1½ grains for neural gia, the use of the remedy being rapidly fol lowed by cold sweating, dizziness, and nausea Externally the hydrochlorate of orthin wa

tested as a remedy in psoriasis, but although it had the effect of softening the scales, it did not act as quickly or as efficaciously as chrysarobin.

It would thus seem that the results obtained from the experiments of Professors Kobert and Unvericht are practically negative as far as any valuable results have been obtained. They undoubtedly, however, indicate a movement in the right direction, and in any case a record of failure, when frankly related, is quite as instructive as a series of successes; at any rate, we can be sure that the statements of the authors are reliable,—a fact which too often admits of doubt when we read the enthusiastic eulogies which ordinarily attend the introduction of a new remedy.

In conclusion, we might mention that Dr. A. Heinz (*Berliner Klin. Wochenschrift*, No. 3, 1890) has tested the antipyretic value of several other derivatives of phenylhydrazin and finds that they all possess such toxicity as to unfit them for employment in therapeutics.

THE CUMULATIVE ACTION OF CERTAIN MEDICINES.

IT has long been known that certain medicines, after a more or less prolonged administration, may have a cumulative effect, and suddenly produce alarming symptoms. This is sometimes due to delay in absorption,—the medicines simply accumulate in some part of the digestive tube from lack of the proper conditions for absorption. There may, for instance, be a catarrhal state of the gastro-intestinal mucous membrane, or deficiency of the proper secretions by which the medicine is rendered soluble, till, with restoration *ad integrum* of the mucosa, absorption takes place, all the doses previously administered enter the circulation, and the organism is overwhelmed. Such a condition has been now and then witnessed when quinine pills have been given for malaria, solid opium in cholera, etc. Gubler calls this *accumulation of doses.*

The accumulation has been accounted for in some instances by arrest of excretion. The medicine has been absorbed, but it accumulates in the blood, owing to failure of the kidneys to eliminate it. The slowness with which, generally, medicines are eliminated when the kidneys are diseased—as in chronic interstitial nephritis—is well known; toxic phenomena may supervene more or less rapidly from this course. But, independently of disease, there are drugs which diminish urination by contracting the renal vessels; digitalin, according to Brunton and Power, has this property. This fact may explain some of the instances where a cumulative effect has followed the administration of digitalin. Strychnine has a similar action on the renal vessels (Lauder Brunton), and strychnine may almost be said to be the type of medicines that may become cumulative. That accumulation may come about in this way is rendered exceedingly probable by experiments of Claude Bernard and Hermann, who found that curare, which would not poison an animal when introduced into the stomach, owing to the rapid removal of this substance by the kidneys, would speedily paralyze when the kidneys were extirpated or the renal vessels tied.

The theory, then, is this: A certain quantity of an active medicinal substance, as strychnine, digitalin, represented, we will suppose, by 10, is daily taken into the system. We will suppose, moreover, that the dose, which may be regarded as the maximum of safety, is 50. Every day, then, an amount equal to 10 is absorbed and 5 eliminated, and by the eighth day the maximum dose consistent with safety will have been reached, and the medicine will so far have accumulated in the blood and nervous tissues as to produce its toxic effects.

This illustration, which is similar to one given by Gubler, may serve to explain some instances of cumulative action, but not all. Thus, it may explain why lead, arsenic, mercury, phosphorus, strychnine are cumulative, but it does not explain a peculiarity about digitalis, to which Gubler has called attention,—*i.e.*, the augmentation of the physiological phenomena of digitalism after suspension of the medicine. The tincture, powder, or infusion has been given for several successive days, with progressive slowing of the cardiac pulsations, and a more regular and forcible action of that organ. The administration of the medicine is stopped, with a pulse, we may suppose, down to 75 or 80. Now it will often happen that the fall of the pulse and other phenomena due to the drug will continue for several days, a week or more, causing more or less alarm. Quévenne (cited by Gubler) gives instances in his practice where this progressive slowing of the pulse continued from ten to fifteen days after discontinuance of the digitalis; and Durozier cites a case where the effect lasted twenty-five days.

Authorities (as Phillips) have denied the cumulative action of digitalis, and Gubler, when he wrote his "Commentaries on the Codex" (1872–74), was disposed to place little stress on this particular "inconvenience," which, he says, most observers have not noticed, and which, when noticed, "ought rather to be attributed to 'accumulation of doses,' the digitalis having been given in pill form." In his later "Therapeutic Lessons" and other works he acknowledges his mistake, and insists on what he designates as "accumulation of action," and this is substantially his explanation: Ordinarily accumulation of action is due to a certain fraction of the active substance being retained, day by day, in the parenchyma of the organ which it modifies, till the quantity exceeds the mean of safety. In the case of digitalis, it would seem that the active principles do not immediately penetrate the parenchyma, but remain in the lymph-spaces outside till a sufficient quantity has accumulated to have a real toxic effect when finally brought in contact with the ganglionic nerve-cells on which their specific action is naturally exercised.

It need hardly be added that this explanation, however plausible, is only a speculation, being unsupported by any direct proof.

THE EVILS OF HYPNOTISM.

PROFESSOR GERMAIN SÉE, in a recent series of lectures on "Sleep, Insomnia, and Somniferous Agents," has called attention to some of the evils which he thinks may be derived from hypnotic practices when employed for therapeutic ends. Hypnotism favors and develops tendencies to hysteria. Hysteria is a disease in which the higher cerebral activities are suspended; now this is a leading and essential characteristic of the hypnotic state. The Minister of War in France, in consequence of certain bad results, has forbidden military physicians to resort to hypnotism among the soldiers from fear that hysteria might be prevalent in the army. The same proscription, says Professor Sée, ought, with at least equal force, to apply to the practice of hypnotizing children, who may be made fools or crazy by the constant repetition of such practice. Gilles de-la-Tourette declares that those that are hysterically predisposed are almost certainly made hysterical by frequent hypnotizing, and as for those already hysterical, if, by chance, one now and then succeeds in curing a paralysis or a contracture, it is only to make the disease locate itself els where, or substitute for the contracture paralysis a series of fits.

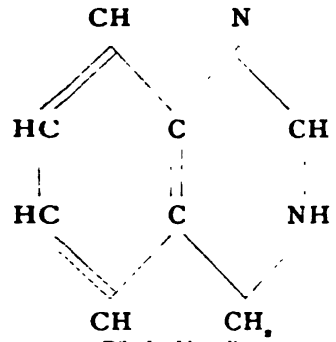
OREXIN, A NEW STOMACHIC.

STRANGE as it may seem, the last synthe ical compound which has appeared as candidate for a place in the Materia Medi is neither an antipyretic, nor a hypnotic, b is claimed to possess marked virtues as stomachic and a stimulant to the appetite f which the name "orexin" has been propose The great majority of substances included i the group of stomachics are those to whic the property has been attributed of stimu lating the appetite, such as rhubarb in sma doses, tincture of cinchona, condurango, an a host of the so-called simple bitters.

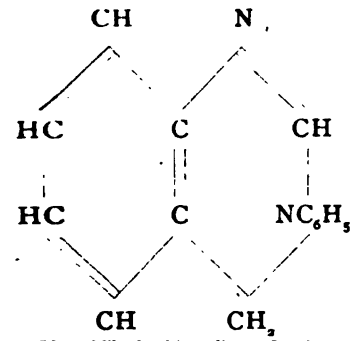
The opinion of physicians as to the wort of these substances in loss of appetite is very different one, as might be readily see from the difficulty of determining whethe the effects noted after the administration o such a remedy are directly attributable to th drug or not; but it is generally admitte that in cases where the necessity for stimu lating the appetite is most urgent all of thes remedies have proved unreliable. That substance may be regarded as a true stom achic it should possess not only the power o stimulating the appetite, but also the diges tive functions of the stomach. Experimenta investigation of the substances above-men tioned in this connection have yielded bu uncertain results. The principal line of study has been directed towards determining th influence of bitters on the secretion of hydro chloric acid while any reduction of the tim of digestion under their influence has faile of demonstration. Certain substances un doubtedly possess the property of reducing the sojourn of food in the stomach, such, fo example, as the administration of hydrochlori acid in cases of dyspepsia, which are clearly attributable to reduction in the amount o gastric juice secretion. A true stomachic should then not only increase the appetite but also, and more particularly still, assist the functional activity of the stomach, and it is claimed by Professor Penzoldt (*Therapeutische Monatshefte*, February, 1890), that the hydrochlorate of phenyl-dihydro-chinazolin, or "orexin," is such a substance.

This body was prepared synthetically by Messrs. Paul and Busch, and is describ (*Pharm. Journ. and Trans.*, March 1, 189

s being a derivative from chinazolin, a term pplied to a compound represented by a tructural formulæ differing from that of hinolin in having two CH groups of the aphthalin ring replaced by N instead of ne. In dihydrochinazolin there is an imide roup, the hydrogen of which is replaceable by an alkyl group, and it is the compound in hich the substitution is effected by a phenyl roup that is now put forward under the ame "orexin."



Dihydrochinazolin.



Phenyldihydrochinazolin, or Orexin.

On account of its great solubility the author's experiments were made with the hydrochloride of this base, which occurs in colorless, crystalline needles containing two molecules of water of crystallization which is gradually given off in an excicator, the crystals becoming efflorescent; while the base is almost insoluble in water, this salt is readily soluble in hot water. It acts as a violent irritant to the nasal mucous membrane, and, placed upon the tongue, causes a bitter and intensely persistent burning taste. From a watery solution of the hydrochloride the base is separated by alkalies as an oily precipitate which afterwards crystallizes. Professor Penzoldt publishes notes of a number of experiments made by a student (Mr. Hoffman) as to the physiological action of this substance, and as to its influence on the blood and microorganisms, fuller details being promised in the publication of Mr. Hoffman's graduation thesis. Experiments on frogs show that doses of ½ to ⅓ of a grain produced death from motor paralysis, the paralysis apparently progressing from the periphery: while in warm-blooded animals "orexin" locally produces no inflammation or irritation either of the conjunctiva, the stomach, or cellular tissue. Subcutaneous doses given to rabbits of ¾ of a grain for every two pounds of body-weight produced no noteworthy symptoms, while, on the other hand, 4 grains caused marked toxic symptoms, consisting in tremor, clonic and tonic convulsions, dyspnœa, with retarded respiration, and accelerated pulsation of the heart, from which, however, animals fully recover in a few hours. In the dog, likewise, it produced vomiting. "Orexin" destroys the red-blood corpuscles and causes the appearance of the absorption band of methæmoglobin in the spectrum, while the blood itself becomes black in color.

These experimental results offer no indication as to the therapeutic applicability of this substance, though they teach that it is comparatively free from toxicity when given in moderate doses. In comparing the amounts given to a rabbit before symptoms of poisoning were produced, the inference seems warranted that it would require doses of 375 grains to poison a man.

Mr. Hoffman experimented on himself with gradually increasing doses, and found that it was not until doses of 15 grains were reached that there were slight nausea, dizziness, hotness of the head, and reddening of the face. On the other hand, he noted that in doses of 7½ grains there was astonishing increase in the appetite, and a constant feeling of hunger, so that the experimenter was led to eat more than double the amount he usually consumed. It was this result which led to the employment of the name "orexin" (ὄρεξις = the appetite.*) The author then instituted some experiments as to the influence of this substance on the duration of gastric digestion, and his experiments, which were made on a healthy individual, indicated that the administration of 4 grains of hydrochloride of "orexin" reduced the sojourn of white bread and meat in the stomach half an hour, while the hydrochloric acid, under the influence of this remedy in the digestion of beefsteak, appeared in the gastric juice one hour sooner

* Orexegen would etymologically appear to be a better name (ὄρεξις γενναω = I generate), unless the author means that in giving "orexin" he gives appetite.

than when it had not been given. The results obtained in this individual were so striking that the experiment was repeated on other healthy individuals, with the same result,—namely, that "orexin" diminishes the duration of gastric digestion and leads to the earlier appearance of hydrochloric acid in the gastric juice, while further it leads to a great increase in the appetite. Seven and a half grains still further reduced the duration of gastric digestion (half an hour). Professor Penzoldt then proceeded to test the value of this substance as a stomachic in thirty-six clinical cases of the most varied character in which there was either loss of appetite or disturbance of digestion. In cases of severe gastric disturbance no experiments were made, as the author feared the irritating effects of the substance on the mucous membrane would increase inflammatory affections of the stomach. Its results, however, appear to be especially valuable in the combating of the loss of appetite which so often follows severe operative cases, in which the entire success of the operation is dependent upon the preservation of strength in the individual. So also in cases of pulmonary tuberculosis the appetite was greatly improved although no influence on the febrile processes was evident. In only five of the thirty-six cases experimented on by Professor Penzoldt was no effect noted, in five more the effect was uncertain, while in all the others it is claimed that the most surprising results were obtained. In a few cases the first dose was followed by an improvement of the appetite and digestive power, though the ordinary treatment which had preceded it had had no effect. That the results noted were really dependent upon the drug, and not coincidental, was determined by the return of the previous state of affairs when the remedy was suspended. One of the most striking results obtained by the author was the fact that patients in advanced stages of phthisis increased from six to seven pounds in weight in two or three weeks of this treatment. In but rare cases were any unfavorable after-effects noted. In a few instances there was a persistent burning sensation in the alimentary canal, although the author attributes this to the rupture of the capsule in which the drug was given. Vomiting followed in five cases, although it was then slight, and disappeared even during perseverance in the treatment. The method of administration was to make up thirty grains of orexin hydrochloride with extract of gentian and althea powder into twenty pills, which were gelatin-coated, 3 to 5 of these to be taken once or twice dai with a large glassful of meat-broth, a co siderable quantity of liquid being required c account of the pungent properties of the coi pound. This method is stated to be prefer ble to the use of capsules, since the latt frequently become ruptured before enterin the stomach and then produce a bitter tas and severe burning in the throat.

The author advises the administration c 3 of these pills early in the morning, and no effect is noted the number may be in creased to 4 or 5 or even repeated twic daily. If no effect is noted within four c five days this treatment should be stoppe for three or four days and then continued.

The author's results are apparently espe cially worthy of attention since he writes tha in no case were the patients informed as t the expected effect.

In conclusion, Professor Penzoldt espe cially cautions against expecting too muc from this new remedy, although he seem confident that quite as successful results a he obtained may be expected from its ad ministration. As to its mode of action n theories are suggested.

Reports on Therapeutic Progress

THE SAFE PASSAGE OF A SHARP PIECE OF GLASS THROUGH THE DIGESTIVE TRACT.

In a recent number of the THERAPEUTIC GAZETTE we alluded to a method which had proved to be of service in the treatment of foreign bodies in the alimentary canal by restricting patients to an exclusive diet of potatoes. A case published by DR. WILLIAM H. FLINT in the *New York Medical Journal* for March 8, 1890, offers additional testimony as to the value of this procedure. The case was that of a young married woman, who accidentally swallowed a sharp piece of glass, which had been detached from a glass medicine tube, and had been swallowed before the patient could arrest its downward passage. The length of the fragment was about one-third of an inch and its breadth about an eighth of an inch. It was pointed at either extremity, and being a segment of a cylindrical tube, was convex on one side and concave on the other. From an examination of the line of fracture on the tube, the edges of the detached piece were judged to be very thin and sharp. The glass had not caused great dis-

comfort during the process of its deglutition, but had occasioned some pain referable to the soft palate and to the lower part of the pharynx. These parts were observed on the first examination to be incised and slightly bleeding, but the glass was not to be seen. A short time before Dr. Flint was summoned the patient had eaten a bowel of bread and milk, and five minutes before his arrival had taken a powerful emetic. After ascertaining that the glass was not within reach of the pharyngeal forceps, he passed a soft rubber stomach-tube into that viscus after obtunding the sensibility of the pharyngeal mucous membrane by spraying it with a two per cent. solution of cocaine hydrochlorate. No sooner had the tube entered the stomach than violent vomiting ensued. The major portion of the stomach's contents were thus evacuated into a jar, but no trace of the glass could be found. After this the stomach was washed out with quite warm water. There upon the tube was again passed, and the lavage again thoroughly executed, but without result. Neither did the eye of the tube, which was slowly withdrawn with a rotary motion, succeed in dislodging the glass. During the act of emesis the patient complined of a cutting sensation referred to the upper part of the œsophagus, and this feeling continued until about twenty-four hours after the glass was swallowed. Dr. Flint then concluded that the fragment was impacted in the œsophagus, and that it would be injudicious to use a probang lest this instrument should force the pointed glass through the œsophageal wall; therefore he ordered a glass of milk and Vichy water every two hours, a large baked potato with butter every four hours, and a half-cupful of flaxseed-tea every two hours, so arranging the doses of flaxseed-tea that they did not coincide with those of the milk and potatoes.

The patient suffered no inconvenience from her vitreous repast, except the slight œsophageal pain already alluded to, which, twenty-four hours after the glass was swallowed, was felt to change its position suddenly to a point lower in the œsophagus and then to disappear, leaving only a little soreness in its place. The same diet was continued, and in the evening, about thirty-six hours after the accident, 6 teaspoonfuls of castor oil were administered.

On the next morning there was an abundant fæcal dejection, which, however, contained no glass. The same treatment was, therefore, maintained, and a second dose of castor oil was given in the evening, about sixty hours after the glass was swallowed. During all that day there was no sensation, save that of slight tenderness in the stomach or the intestines.

On the morning seventy two hours after the accident, the bowels moved freely and painlessly. On examination of the dejecta, which were mostly solid and coherent, the glass was found, unbroken, and impacted in the centre of a fæcal mass of such firm consistence that considerable force was required to crush it and to liberate the fragment. Since then the patient has been perfectly well, and the slight wounds in the soft palate and in the pharynx healed quickly.

INJECTIONS IN ACUTE GONORRHŒA.

Dr. L. Friedheim, assistant in the clinic of Professor Neisser at Breslau, who has made a large number of observations with several drugs, such as zinc, lead, bismuth, tannin, various preparations of mercury, permanganate of potassium, creolin, etc., to test their astringent effect as well as their capacity for destroying gonococci, is equally dissatisfied with all the usual drugs. They all had either no permanent effect in destroying gonococci, or they irritated the mucous membrane to such an extent that their administration had to be stopped. Nitrate of silver alone acted quite satisfactorily. The author reports on three hundred and eighteen cases treated with this drug, two hundred and thirty-seven of which proved its antibacterial effect satisfactorily. Unfavorable results were chiefly obtained with out-patients who lived in unsatisfactory circumstances. The following is the *modus operandi* in Professor Neisser's clinic: Every acute gonorrhœa is immediately treated with an injection of nitrate of silver of the strength of from 1 in 4000 to 1 in 2000. The discharge generally increases at first, becoming thicker and more purulent, but very soon decreases and becomes thinner, whiter, and more epithelial. The gonococci decrease in a remarkably short time, and sometimes entirely disappear in a few days. The injections are first administered from four to six times a day, and are then reduced to one or two in the twenty-four hours, when at the same time a mild astringent like zinc or boracic acid is injected; but even after entire cessation of the discharge, the nitrate of silver is still injected once a day for many

weeks. The proper regimen must be followed for an equally long time. The injections are administered even when complications occur, especially epididymitis.—*Lancet*, February 15, 1890.

THE USE OF AIR IN THE EXAMINATION AND TREATMENT OF CAVITIES AND CANALS WITH THE AID OF REFLECTED LIGHT.

In the *New York Medical Journal*, for February 22, 1890, Dr. Franz Heuel, Jr., states that the disadvantages of the electric endoscope of Leiter, as regards the smallness of the field of vision, may be remedied by sealing hermetically the proximal end of a shortened canula and attaching to its side a fitting for a rubber tube, with bulb, to force in atmospheric air with which to dilate the urethra. He thus makes use of a speculum made of rubber, glass, or metal, shaped like a truncated cone, with the small end cut obliquely to facilitate its introduction into the urethra without the aid of a stylet. At the other or proximal end is a flange which is useful in separating the cover from the speculum. Into this end is closely fitted a movable cover having a transparent glass crystal, fitted air tight, and an attachment for a rubber tube with bulb. To prevent the glare of reflected light, the glass crystal is placed at an obtuse angle to the line of vision, and the inside of the instrument is blackened. After the canula is inserted into the meatus air is forced in by the rubber bulb until the requisite distention of the urethra is obtained. The entire canal to the neck of the bladder may thus be exposed and examined by the aid of reflected sun, gas, or electric light from a mirror on the forehead or in the hands of the surgeon. The air-pressure may be increased or diminished at pleasure while noting the effects upon the mucous membrane and studying every detail of its surface. By exercising a little care, no violence need be done to the delicate mucous membrane, as is very liable to happen with the Leiter canula, with which any sudden movement of the end of the tube against the engorged urethral wall, or even its introduction, usually produces hæmorrhage.

The author claims that by the use of his endescope the openings of the lacunæ, a drop of mucus or gleety discharge, the innumerable small blood-vessels, tumors, strictures, false passages, granulations, ulcerations, etc., may all be recognized and their characters and situations noted. Fragments of impacted or loose stone and foreign bodies may be dislodged without the aid of forceps by distending the canal with air and using gravity to propel the substance towards the meatus where it may readily be seized and removed.

Dr. Heuel says there is no danger of forcing air into the bladder, and even should this occur he states that it will do no harm. As the urethra contains a good deal of moisture which is liable to cloud the glass covering he recommends coating the inner surface of the glass with a thin film of glycerine previous to the introduction of the speculum. This effectually prevents clouding of the glass without in any way obscuring the view.

Dr. Heuel is also adapting this endoscope to employment in the rectum, œsophagus and stomach.

ANGINA PECTORIS IN THE HEART PALSY OF ACUTE SPECIFIC INFECTIVE DISEASE.

At the meeting of the Royal Academy of Medicine in Ireland, held January 24, 1890 Dr. J. W. Moore read a paper before the Section of Medicine, the object of which was to bring under notice a cause of the "breast pang" or angina pectoris, which seemed not to have attracted that attention to which it is entitled (*British Medical Journal*, February 15, 1890). This was the cardiac paralysis due to acute infective diseases, especially diphtheria. Within the past year three notable cases of heart failure in infective disease came under his observation. Of these the first and third were cases of diphtheria; the second was a case of septicæmia. The first showed no marked anginal symptoms; in the second and third these were present in an extreme degree. The conclusions arrived at were the following: 1. The group of symptoms described as "angina pectoris" might show themselves in the latter stages of any of the acute infective diseases, particularly septicæmia, or pyæmia, or diphtheria. 2. The anginal attacks of acute infective disease often answered the definition given by Dr. Byrom Bramwell of true angina pectoris,—namely, "a neurotic affection characterized by paroxysms of intense pain in the region of the heart, and a terrible sensation of impending death. . . . The affection is in many cases associated with organic disease of the heart and the root of the aorta, and in its typical and severe forms is apt to prove suddenly fatal." While drawing a clinical distinction between true angina pectoris—rarely met

rith before the age of forty—and the pseudo-ngina, or attacks of cardiac pain to which oung persons were liable, Dr. Bramwell was areful to state "that the two forms run one nto the other, and that it is sometimes diffi-ult or impossible to separate them at the edside." 3. These seizures of angina in in-fective disease appeared to arise in the follow-ng ways: *a*. Deficient innervation of the eart, or a true cardiac paralysis or heart alsy. *b*. A granulo-fatty degeneration of the eart muscle, the result of an acute parenchy-matous myocarditis. *c*. A sudden increase of ension in the peripheral arteries, due to a ause acting upon the body from without, eacting upon an already weakened heart,—the *angina pectoris vaso-motoria* of Nothnagel. 4. Any one of these causes might operate ingly in a given case, or two or more of them ight be combined so as to determine an nginal attack. 5. Treatment was often at-ended by the happiest results in the angina of heart failure from infective diseases, the most useful therapeutical measures being,—1. In *a*, the administration of alcoholic and diffusible stimulants, the application of hot poultices over the heart, and of mustard epi-thems to the extremities. 2. In *b*, besides the foregoing, the administration of heart tonics and stimulants, such as nux vomica and strychnine, arsenic, digitalis, convallaria, and strophanthus. 3. In *c*, the administra-tion of the nitrites, spirit of nitrous ether, nitrite of amyl, nitroglycerine, as well as iodide of ethyl, and such like remedies.

THE TREATMENT OF FEVER.

At the eighty-fourth annual meeting of the Medical Society of the State of New York, held February 4, 5, and 6, 1890, Dr. A. L. Loomis read a paper on this subject (*New York Medical Journal*, February 15, 1890). His remarks, he stated, were intented as suggestive rather than exhaustive. If fever was studied, either from a clinical or pathological stand-point, one soon became convinced that rise of body temperature or an increase or decrease in heat production and heat dissipation were only the appreciable expressions of those processes which attended and depended upon morbid changes in the blood and tissues of the body. These blood and tissue changes were expressed in temperature by a disturbance of the normal ratio between heat production and heat dissipation, and it, as well as the phenomena of fever, were only symptoms of such changes. The prominent factors which determined this ratio were: First, processes of oxidation, which resulted in the production of heat, urea, and carbonic acid. In the lighter degrees of fever the elements which underwent oxidation were mainly the excess of nutritive material in the blood, and also of heat stored in the cells. In the more severe forms of fever with higher temperatures, and even in prolonged fevers of low grade, the oxidation took place in the parenchymatous elements of the tissues, resulting in wasting and atrophy. A second factor was the vaso-motor control of the peripheral circulation. In the early stage of fever peripheral circulation was often decreased, and the surface radiation fell below normal. Subsequently vaso-motor dilatation allowed of free circulation and an increased radiation. Activity of the sweat glands was another factor which in some degree determined this ratio. Although heat radiation might be increased even when the skin was dry and the glands inactive, the decrease of surface temperature went on more rapidly when the surface was bathed in perspiration. The marked relief experienced by fever patients when sweating took place had suggested the presence of some other factor than evaporation and heat absorption, and had led to the belief that the febrile poison could be eliminated by a critical sweat. It was more probable that the sweating was the result rather than the cause of the febrile remission. Recent experiments had determined that heat production, as it depended upon oxidation in the tissues and glands, was regulated by a thermogenic centre. The exact position of this centre had not been definitely settled, but all investigators had agreed in placing it above the medulla, thus distinguishing it from the vaso-motor centre. The causes of fever, clinically, might be classed under two heads,—the nervous and the hæmic. Under the nervous might be included all those conditions which mechanically affected some portion of the nervous system unassociated with inflammatory changes. The hæmic included all those conditions in which irritating elements were known or supposed to be present in the blood. There were four classes of pyogenic elements which might be regarded as hæmic causes of fever. First, elements developed by perversion in the nutritive processes. This perversion might be in the primary digestion, in secondary metabolism, in retrograde changes, or in excretory functions, and resulted in the production of new and

the accumulation of normal poisonous elements in the blood. Second, leucomaïnes, or those poisons which were developed from inflammatory and exudative products. Third, ptomaïnes, or the bacterial elements with which they were associated. From recent studies of the subject, the ptomaïnes developed by bacterial growth had come to be regarded as the cause of infectious fevers, but the exact relation which bacteria and their ptomaïnes bore to the pathological changes of fever were not definitely determined. It seemed probable, however, that in most cases the ptomaïne was the active poison, although bacteria penetrated the tissues and were found in the blood and substance of organs. At present we were ignorant of the exact manner in which these poisonous elements excited these metabolic processes which were productive of fever. They might act directly upon the parenchymatous elements of tissues to increase metabolism, or, if all protoplasmic action was under the control of the nervous system, as some supposed, they might, by their actions on the thermogenic centres, either by stimulation or inhibition, excite those metabolic processes in the tissues which resulted in heat production. The general drift of opinion was towards the belief that the pyogenic elements acted primarily on such centres to produce fever. The question was now being asked if all fevers had not some form of infecting agent as their cause. The experiments of Dr. Roussy, of Paris, had demonstrated that many soluble ferments when introduced into the human organism determined a febrile condition. In all infectious fevers it was a well-established fact that the blood and tissues underwent certain characteristic changes. The fibrin and albumin factors were diminished, the white cells were increased, the corpuscles swollen, crenated, and often broken down. The parenchymatous elements throughout the body suffered varying degrees of cloudy swelling and fatty degeneration. Formerly all these changes were regarded as the direct result of high temperature. Recently it had been satisfactorily demonstrated that they occurred in fevers of low temperatures and that the parenchymatous changes depended upon diminished or perverted nutrition, the result of the excessive metabolism which caused the increased heat. The dangerous effects of high temperatures on the nervous system had, as it seemed, been overestimated. Although it had been determined, both by clinical observation and physiological experiment, th there was a point at which increase of bod temperature caused collapse of nerve for and speedy death, such temperatures we seldom reached in fevers. Temperatures 103° or 104° F. had come to occupy a pos tion of secondary importance with most clin cians. Fever was regarded as a comple process, of which high temperature was prominent, but not always the most impor ant, feature. Our treatment of fever woul vary with our views as to the dangers of hig temperatures. Those who believed that a the grave symptoms of febrile conditions we referable to high temperatures would emplo antipyretics early and persistently, while thos who did not recognize any necessary relatio between the temperature range and the othe febrile symptoms would resort to these reme dies less frequently. If high temperatur ranges were readily reduced by mild anti pyretic measures, the patient at the sam time being much more comfortable, with decrease in the nervous symptoms, the might be employed with advantage, but whe powerful antipyretic remedies had but a tem porary effect upon the temperature, and thei use was followed by great nervous depressio they were better omitted. In a general wa antipyretics might be divided into two classes —the application of cold to the surface, an the internal administration of drugs. A col bath would often produce a greater and mor prolonged reduction of temperature tha could be accounted for simply by heat ab straction. This sedative nervous effect wa regarded as a far more valuable guide i their use than the effect upon the tempera ture range alone. When external abstractio of heat was followed by decrease of nervou irritability, as evidenced by decrease of mus cular twitchings, cessation of delirium, or th advent of sleep after prolonged wakefulness one might be assured that the application were acting remedially, whatever might have been their effect on the temperature. When, on the other hand, the opposite conditions followed with evidences of nervous shock o irritation, no reduction of temperature which they might accomplish could justify the continuance of such measures. Unbiased investigation would justify the statement that while in particular instances cold baths might be advantageously employed for the palliation of certain conditions which we did not know how to abate in other ways, their routine adoption was to be deprecated. In the employment of cold in the antipyretic treatme

of fever it should be borne in mind that such treatment was usually directed against only one symptom,—high temperature,—and on this basis it should never be resorted to unless the temperature range had reached a dangerous point. A temperature of 104° F. might be regarded as the lowest danger point. If the object of its use was simply to abstract heat, cold should never be employed more severely than necessary to accomplish the desired result. For the past two years the speaker had used, in the treatment of typhoid fever, the cold coil to the abdomen, and had not found it necessary to resort to any of the more severe methods for temperature reduction. He believed that the early and constant use of the cold coil had kept the temperature below the danger point. If the only therapeutic effect of cold baths, employed according to Brandt's method, was the reduction of temperature, this could be successfully combated by other and less troublesome measures. If, on the other hand, the beneficial effect was due to the control which they exercised in the thermogenic and vaso-motor centres, their employment must be advocated on an entirely different basis than the one usually advanced. Internal antipyretics included all those substances which had been found capable of reducing body temperature when taken into the system. It seemed probable that these remedies might be of two classes,—those which acted primarily on the thermogenic centres and those which neutralized or in some manner rendered inert pyogenic substances in the blood. Clinically, we knew that in different conditions different internal antipyretics had unequal therapeutic values. At present antipyrin, antifebrine, and phenacetin were the favorites in the specific fevers and conditions where nervous irritation was present and prominent. Quinine was preferable in malarial fevers and in surgical fever attended with suppuration, in septic conditions, or simple inflammatory fever. Salol and the salicylates were employed rather for their primary antiseptic action upon the intestinal contents and only secondarily as antipyretics. Opium and sedatives probably acted simply through their effect upon nervous irritation. It should be a rule never to give large doses of any internal antipyretic. The sudden reduction of temperature was liable to be followed by dangerous depression and collapse. Small doses frequently repeated accomplished all that was to be desired. Temperature reduction was not to be attempted unless it exceeded the danger-point. In all cases it was more important to watch the effects of antipyretics upon the heart and vaso-motor control of the circulation than upon the temperature range. When either were disturbed by their use they should be discontinued. If the destructive metamorphosis which took place in the tissues of the body in fever was due to the pyogenic substance which produced the fever, and not to the abnormal temperature, it became evident that our duty to the patient could not be discharged by the employment of any measure which was directed to the relief of only one of its symptoms. In the light of those recent experiments which demonstrated that the blood serum was the only operative germicide within the animal organism, and that its germicidal power was in proportion to its vitalizing power, we were forced to the position that in the treatment of all acute infectious diseases our successes would be in the judicious use of those measures which Dr. Chambers long ago designated as "restoratives."

THE EFFECT OF ANTIPYRIN ON THE SOLUBILITY OF CAFFEINE.

TANRET has shown that in adding to caffeine nearly its own weight of salicylate or benzoate of sodium the solubility of caffeine in water is greatly increased. In the *Répertoire de Pharmacie* for February 10, 1890, attention is called to the fact that antipyrin likewise possesses a similar property of increasing the solubility of the salts of quinine and likewise added to caffeine increases the solubility of the latter. It is claimed that it is only necessary to add to the caffeine an equal weight of antipyrin to render the former substance entirely soluble in cold water. With warm water it is claimed that it is possible to dissolve seven and one-half grains of caffeine in one hundred and sixty minims of distilled water by the addition of twelve grains of antipyrin, and that the solution so produced is permanently limpid. This increase of the solubility of caffeine by the addition of antipyrin greatly favors its subcutaneous administration, since through its aid fifteen grains of caffeine may be dissolved in three ounces of water, so that the usé of caffeine in neuralgia or migraine will be greatly facilitated by the combination with it of antipyrin; further, the antipyrin may be expected, in these affections, to increase the probability of cure.

CYSTITIS IN THE FEMALE.

At the last annual meeting of the Medical Society of the State of New York, Dr. Robert T. Morris read a paper entitled, "A Common but Rarely Described Form of Cystitis in Women" (*New York Medical Journal*, February 15, 1890). Dr. Morris stated that fissure of the neck of the bladder was apparently much more commonly met with than fissure of the anus, but was seldom recognized. The fissure could be seen by gently distending the urethra with proper specula, and throwing in light with a head mirror. It was a narrow, grayish ulcer, similar to a narrow aphthous spot in the mouth. The primary symptoms were pain on urination, lasting tenesmus after urination, and frequent urination. Secondarily came catarrhal cystitis and nervous derangements. The ulcer might be caused by the compression of folds of urethral mucous membrane by a uterus out of place, from a scratch by a passing bit of gravel, or it might be simply microbic, as the aphthæ of the mouth were now known to be. Treatment consisted in dilating the urethra slowly with the finger, to accomplish the same end as when we stretched the sphincter of the anus for fissure in that locality. Immediately after urination a few drops of a five per cent. cocaine solution injected at the neck of the bladder would at once control the painful tenesmus. The wool tampon for the vagina would give a feeling of great comfort and lessen tendency to spasm of the bladder. Absorbent cotton should never be used for the tampon, because when it became stony in a few hours it irritated the bladder just as it usually did the uterus.

The above treatment failing to cure, the bladder should be opened to give the urethra rest. This was best done by introducing a Sims uterine dilator through the urethra, pressing the bladder-wall backward, and then slipping a scalpel through the wall between the blades, entering from the vaginal surface. In one aggravated case recently he had opened the bladder above the pubes and poured into it, twice daily, an ounce of a mixture of boroglyceride and glycerin. Boroglyceride and glycerin was the best thing for any sort of hypertrophic catarrh. Clots in the bladder should be digested out with pepsin. If the bladder was acidulated with citric acid, pepsin would digest the thick tenacious muco-pus quickly, and give patients great relief. In old cases with contracted bladder, expansion daily with Davidson's syringe and warm boric-acid solution would gradually enable the bladder to hold a pint or more of urine. Skene and Emmet, in their latest works, had referred to this subject of fissure of the neck of the bladder; but English literature previously contained almost nothing on the subject, although the disease in question was commonly met with.

THE ACTION OF CAMPHORIC ACID ON THE NIGHT-SWEATS OF PHTHISIS.

Dr. Leu (*Wiener Medizinische Blätter*, February 6, 1890) has tested the action of camphoric acid on the night-sweats of phthisis. This substance, which is produced by the oxidation of camphor by acid, is only slightly soluble in water, but quite soluble in alcohol. Although it has by no means an unpleasant taste, it is better given in capsules although it is not certainly necessary. In the author's experience this remedy was given to thirteen different individuals, in fifty-five different doses, who suffered from night-sweats in some cases to a very severe degree. Perfect success was reported as being obtained when there was perfect dryness of the skin and this result was obtained in sixty per cent. of the cases treated. A partial success was obtained in only eighteen per cent. The average dose amounted to 30 grains of camphoric acid, although in some cases this dose was increased to 45 or even 75 grains, 35 to 45 grains being given in the evening and about 30 grains being given in the middle of the day. A remarkable fact was that sometimes the favorable influence of the camphoric acid was not noted until the evening after its administration, while, further, the good effects persisted for several successive evenings. In order to make a comparison with the remedies which possessed the greatest repute in the treatment of night-sweats, such as atropine, the author administered this remedy to six different cases in twenty-four instances, alternating each evening with camphoric acid. It appears from these experiments that perfect success was only obtained in forty-two per cent. of the cases treated with atropine, thus falling below camphoric acid in efficacy; while, further, even in the cases which were favorably influenced by the atropine, the permanence of the effect was not to be compared with camphoric acid. Moreover, all disagreeable after-effects, or secondary effects, from the administration of camphoric acid are quite insignificant,—a very different state of affairs from what fol-

lows the administration of atropine in physiological doses, such as dryness of the throat, loss of appetite, gastric disturbance, absolute dizziness, etc. Moreover, the author claims that the appetite and digestion are not influenced by the administration of camphoric acid. In some cases the patients attributed a certain amount of soporific effect to the action of camphoric acid, although this, perhaps, was attributable to the fact that the suppression of the sweat removed a cause which ordinarily would tend to disturb sleep. In one case there occurred an eruption, similar to urticaria, attended by severe itching, a few days after the administration of camphoric acid; but in spite of the continued administration of this drug it disappeared, so that it is extremely doubtful whether its appearance was merely a coincidence or whether it was attributable to the influence of the camphoric acid. The author has also made a number of experiments as to the effects produced by the external application of alcoholic solutions of camphoric acid. In one patient, who suffered from marked local sweatings, the substance was locally applied, and seemed to be extremely efficacious.

The author states that he is now occupied with experiments tending to test the activity of camphoric acid in sweating of the feet. According to the author's testimony it would appear that camphoric acid is worthy of further trial in the treatment of the night-sweats of phthisis.

NITRATE OF POTASSIUM FOR MALARIAL FEVERS.

In the *Virginia Medical Monthly* for February, 1890, DR. J. D. HUNTER claims that he has found that potassii nitras is an unusually effective agent in the treatment of chill and fever. He states that he has tested it thoroughly during the past five years, and claims that at least sixty-five per cent. of all the cases treated have been cured by the administration of a single dose, while the remaining thirty-five per cent. were uninfluenced by continued doses.

The best results were obtained when administered during the premonitory stage, which usually ushers in the chill. Twenty-five or thirty grains given at this period will either abort the chill or materially shorten its duration. The febrile stage is correspondingly shortened or reduced to a minimum. A second dose is seldom required; relapse is infrequent. Recent attacks, as well as protracted conditions, were alike cured by the administration of a single dose, while cases apparently similar, corresponding in character and duration, were not relieved. Other forms of intermittent, not associated with chill, were not benefited in a single instance.

Dr. Hunter writes that he has kept his cases under close observation, and that a number of his colleagues have likewise employed this salt, and their experience was identical with his as regards the unusual rapidity and permanence of cures. Their proportion of cures, however, he writes, did not quite equal his own.

Though the nitrate of potassium is recognized as a febrifuge, its use as an antiperiodic is to us a novel one. We trust that Dr. Hunter's experiments will be continued and reported on by others.

SODIUM CREOSOTINATE.

As far back as 1876 sodium creosotinate was recommended as an antipyretic, but it appears to have fallen into discredit on account of uncertainty of action. As the compound used was probably a varying mixture of the sodium salts of the three isomeric acids, derived from the corresponding cresol isomers, PROFESSOR DOMME instituted some comparative therapeutic experiments with the separated compounds (*Pharm. Zeit.*, January 29, p. 68). He reports that only the para-creosotinic acid is of use in medicine, the ortho and meta compounds proving one inactive and the other dangerous. Professor Loesch found that sodium paracreosotinate is well tolerated by adults in quantities reaching to 6 or 8 grammes (90 to 120 grs.) daily. A part of the compound appears to pass unaltered into the urine, which then gives a violet color with ferric chloride. Administered to children, it behaved as an active antipyretic in large doses, 1 gramme (15 grs.) having been giving to a child 12 years old within three hours. It is further stated that good results have been obtained with the salt in the treatment of acute gastro-intestinal catarrh in children. Sodium paracreosotinate is said to occur as a fine crystalline powder, with a distinctly bitter but not disagreeable taste. It dissolves in 24 parts of warm water, from which it does not separate on cooling. The free acid crystallizes from aqueous solutions in long shining needles; it melts at 151° C., and sublimes undecomposed. —*Pharmaceutical Journal and Transactions*, February 1, 1890.

TREATMENT OF CHRONIC DIARRHŒA.

In the *Boston Medical and Surgical Journal* for February 20, 1890, DR. H. F. VICKERY publishes a paper on the treatment of chronic diarrhœa, which, although it offers no claim for originality, yet calls attention to a number of points which are doubtless overlooked by the majority of practitioners. He shows that in the treatment of chronic diarrhœa four general principles should be attended to. *First*, the diseased parts should be given rest; *second*, any tendency to abnormal fermentation should be corrected; *third*, no fæcal accumulation should be permitted; *fourth*, pain should be relieved.

Taking these four indications in order, he shows that rest for the bowels means the ingestion of such kinds and amounts of food as will tax intestinal digestion least. Of course, it is not meant that the patient should be put on a starvation diet, for although this succeeds in acute diarrhœa, it is not so in chronic. The principle which Dr. Vickery recognizes, although he does not emphasize it, is that substances which are digested in the stomach are suitable in such cases, while those which are dependent upon intestinal digestion should be avoided. He therefore recommends meat-broths and aseptic milk, while oily bodies and starchy foods should be avoided.

In the second place, as the intestines, even in health, swarm with bacteria, and the natural processes of intestinal digestion border close on putrefaction, some antiseptic is almost always useful as an ingredient in the prescription for chronic diarrhœa. Subnitrate of bismuth probably acts to some extent in this way, besides soothing the mucous membrane. Michailoff, of St. Petersburg, has recently reported the cessation of a diarrhœa which had lasted thirty years under the employment of salicylate of bismuth. Dr. Vickery also used carbolic acid (½ grain in each dose), beta-naphthol (½ to 1 grain), and salol (2½ to 5 grains). Thymol has also been praised (2 grains three times a day), but in the one case which the author tried it he suspected it of causing headache, although the diarrhœa improved while it was being taken.

The danger from fæcal accumulation in chronic diarrhœa seems to be one which is rarely recognized, although Dr. Vickery states that the accumulation of fæcal masses may cause mischief. This undoubtedly would be true if it occurred, and although there may be, of course, a fluid discharge from the bowels, aud hard masses still remain in the intestine, such a state of affairs is of but ex ceptional occurrence, and its recognition an removal of the fæcal accumulations will i nearly all cases cure the affection.

This factor in the causation of diarrhœa i well worthy of attention, and a paper by Dr C. P. PUTNAM in the *Boston Medical and Sur gical Journal* for March 6, 1890, especiall emphasizes the importance of bearing in min that in some cases retention of fæces may b an important element in rendering diarrhœ persistent. Of course, where the diarrhœa i known to be due to the presence of some of fending substance, no one hesitates to admin ister a cathartic; thus castor oil, or rhubarb, o calomel are used frequently, and with muc advantage, in diarrhœa from indigestio in children. Dr. Putnam refers to three typi cal cases, occurring in an infant, a young woman, and a youth, illustrating differen evidences of diarrhœa being kept up by the retention of fæces.

The practice of giving opiates for diarrhœa, irrespective of its cause, is highly objectionable, and may be even dangerous. The number of discharges is of comparatively little importance, in offering indication as to the character of the treatment, as compared to their quality. Extremely offensive stools, as indicating a process of decomposition in the intestines, is to be regarded as an indication for the administration of a laxative, and it will be found that the administration in some cases of a few calomel powders will produce much more rapid and permanent improvement than the routine treatment with astringents and opiates.

Pain may be overcome by the use of a few drops of laudanum, or a drachm of paregoric, to each dose of medicine, omitting it as soon as may be. Sometimes the bowels are lame, so that motion is painful. Sometimes changes of temperature affect the patient disastrously. For both these conditions a flannel swathe is useful. And in severe cases, rest in bed is demanded.

Where the frequent dejection of small amounts of mucus and blood, with tenesmus, indicates the predominance of colitis, rectal irrigations through a soft tube passed high up are both rational and efficient. Two or three pints of simple cold water used in this way may do good. In it can be dissolved sulphate of zinc or alum to the amount of one grain to every four to six ounces of water; or two grains of nitrate of silver to a pint may be injected every one or two days, if allowed to come away at once.

POTASSIUM BROMIDE AS AN ANTIDOTE TO IODOFORM.

The poisonous after-action of chloroform, alluded to in a previous issue, is confirmed in the report of two cases in which the maintenance of chloroform narcosis for two hours, in a case of a man operated on for resection of cancer of the rectum, lead to the production of jaundice. The essential point of interest, however, in this case, which was reported by DR. J. SAMPER in the *Centralblatt für Klinische Medicin*, March 1, 1890, was that for four days there was marked iodism produced as a consequence of the absorption from iodoform dressings, the symptoms being greatly improved by the administration of bromide of potassium. The author apparently finds some connection between the jaundice produced by chloroform and the intolerance of iodoform, since he states that after the skin had regained its normal tint iodoform was then well tolerated. The author further explains the favorable effect produced in these cases by potassium bromide as due to its influence on free iodine, in which respect it is preferable to the ordinary antidotes, such as potassium bicarbonate, sodium chloride, or potassium acetate. Further, the sedative action on the nervous system in iodism is also worthy of therapeutic notice.

Finally, the author claims that potassium bromide may be used as a preventive of iodine-poisoning.

THE PHYSIOLOGICAL TREATMENT OF OBESITY.

At the meeting of the New York Academy of Medicine, held January 21, 1890, DR. WALTER MENDELSON read a paper of this title (*New York Medical Journal*, February 8, 1890).

In order to gain an intelligent insight into the nature of obesity it was necessary to have some idea of the laws relating to the processes of nutrition. Up to quite recent times it was the general belief that the oxygen taken into the blood from the inhaled air was the direct factor concerned in the many chemical decompositions going on in the body; and, in consonance with this view, it was held that fat accumulated from more of it being formed than the oxygen could consume, either excess of food-supply or deficiency of oxidation being ascribed as the causes of obesity. Simple and satisfactory as this hypothesis appeared, it was now relegated to the limbo of errors. The belief at present was now that all the metabolic phenomena of the economy had their seat in the cells, and that all cells had inherent power of splitting up relatively complex chemical compounds into bodies of simpler composition; and, while we are as yet unaware of the processes by which the cell effected these decompositions, we did know that the oxygen in the tissues was but indirectly concerned in them. Certain external agencies had the power of modifying the chemical powers of the cells. Among those that diminished might be mentioned quinine, alcohol, morphine, low temperature, and deficient food-supply, including insufficiency of oxygen; while excess of food-supply, the changes subsequent upon fever, high temperature, and muscular activity increased them. The disintegratibility of the different classes of foods brought to the cells varied widely, and the causes of obesity and its treatment on physiological grounds could only be fully understood when the differences were known and given their full value.

Experiments had shown that, of the three great classes of food,—the proteids, the carbohydrates, and the hydrocarbons,—the one most easily split up was that of the proteids. The carbohydrates were next in order, while the fats, or hydrocarbons, were the most resistant. If proteid food alone was ingested, the soluble albumen carried to the cells was there in part converted into the tissue-albumen of the organ formed of the cells, and in part changed into fat and other products,—all of which would tend to be split up into still simpler bodies until the power of the cells became exhausted. If, now, in addition to the proteids, fat was ingested, the decomposition of the proteids would go on as before, but the food-fat, being more readily oxidizable than the tissue-fat formed from the proteids, would shield the tissue-fat from destruction, and at the same time preserve the tissue-albumen from destruction as well. Thus, indirectly and in a double way, the food-fat led to a storing up of fat. By affording a more easily oxidizable substance for the liberation of energy than tissue-fat, and by preserving the tissue-albumen from destruction, there resulted greater chemical activity of the cells and a more active elaboration of the food-albumen. The result of this was both increased growth of the cells and increased manufacture and storage of fat made from the albumen brought to them. It had been determined that the following quantities of

the food classes were equivalents and isodynamic, and that, in their decomposition into carbonic acid and water, each yielded an equal quantity of energy, measured as heat: Fat, 100 grammes; albumen, 211 grammes; starch, 232 grammes; cane-sugar, 234 grammes; and glucose, 256 grammes.

From this it was apparent that an accumulation of fat would most readily occur when the diet contained an overplus of fat, because, while least in quantity, fat had the highest equivalent; next, when it contained an overplus of albumen, and lastly, of carbohydrates. After reviewing the chief factors concerned in the manufacture and deposition of fat in the body, Dr. Mendelson took up the methods to be adopted for preventing such accumulations. The aim was to make the production not exceed the consumption, and, where a surplus existed, consumption must for a time exceed production. In the great majority of cases ingestion of too great a quantity, or of an improper quality, of food, often combined with too little exercise, were the causes of obesity. It remained, therefore, to suitably regulate the diet and exercise. It should be borne in mind that the change we wished to bring about, to be beneficial, must be gradual; that the cells must be educated by degrees to the new duties we wished them to perform; that anything approaching starvation, like the Banting cure, was to be condemned. The diet should be principally albuminous and relatively little non-nitrogenous food. But we must always keep in mind that as the fat of the body became by this process gradually reduced, the diet must undergo a corresponding change, more and more of the non-nitrogenous foods being allowed as the body grew relatively richer in albumen and poorer in fat. Unless this was done a point would be reached where not only the fat of the body but the albumen as well would be consumed, and the patient, after feeding thus on his own muscular and glandular tissues, would begin to complain of weakness and lassitude. This, of course, was to be avoided by carefully regulating the diet; the patient must never feel worse, but always better under treatment. Dr. Mendelson had prepared a diet list which was to serve the patient as a general guide. No hard and fast rules could be laid down. Above all, one must never yield to the wishes of the patient to grow thin quickly. All reforms, to be lasting and beneficial, must be slow in their action; the growth must be from within, not alone an impress from without.

SYMPTOMS OF LESIONS OF THE SPINAL CORD.

A modification of the current views as to the symptoms of complete transverse lesions of the spinal cord will be necessary after the masterly and convincing paper which was read by Dr. BASTIAN at the meeting of the Royal Medical and Chirurgical Society on February 22 in support of his contention expressed eight years ago, that in *complete* lesions of the spinal cord there is absence of the knee-jerks and other deep reflexes and flaccidity of the limbs, and not rigidity with increased reflexes as usually taught. In support of his contention he gave minute and accurate clinical records of four cases in which there was developed, under observation, complete transverse lesion of the spinal cord (in these cases due to extensive softening). At first the deep reflexes were exaggerated, but as the lesion became more and more complete, as shown by absolute motor and sensory paralysis, the deep reflexes entirely disappeared, and the limbs became completely flaccid. This condition of things continued until death, when the necropsies showed (at any rate in three cases) complete destruction of the cord at the level of the lesion. In these cases shock was out of the question, the lesion was in the upper part of the cord, and there was not the slightest evidence of any independent lesion in the lumbar enlargement. Dr. Bastian fortified his position by quoting nine cases of fracture-dislocation in the cervical and upper dorsal regions, in which flaccidity of the limbs and abolition of the reflexes were noted soon after the accident, and persisted until death occurred, in most cases weeks later, when all shock had long passed away. It is much to be regretted that fuller opportunities could not be afforded for discussing so important a communication; but in the brief discussion which followed on these points additional cases were quoted by Dr. Hughlings Jackson and Mr. Bowlby, completely confirming the views expressed in the paper. Dr. Bastian looks with suspicion on the cases which have been described as complete lesions due to compression of the cord in Pott's disease. A case will be found in our issue of February 22, in the report of the meeting of the Pathological Society, in which for twelve months before death there had been absolute paralysis of motion and sensation, but in which there was rigidity and increased reflexes. Here, to the naked eye, the disorganization of the cord at the level of the

lesion appeared to be complete; but careful examination by modern methods showed the existence of a considerable number of axis cylinders traversing this apparently disorganized portion of the cord, so that this case, and probably also those referred to by Dr. Buzzard in the discussion, would hardly come under the category of *complete* lesions to which Dr. Bastian's paper refers, and with regard to which he completely established his case.

Another point of interest from a clinical point of view was the different behavior of the superficial and deep reflexes. In all of Dr. Bastian's cases, after motility, sensibility, and deep reflexes were completely abolished, the plantar skin reflex persisted for a short time. Mr. Bowlby also had observed that in the cases of fracture-dislocation, some weeks after the accident the skin reflexes returned, while the deep reflexes remained absent until death. Of not less interest than these clinical observations were the remarks made by Dr. Bastian as to their bearing on the theories with regard to muscular tone and the deep reflexes. He held that these cases showed that the tone of the muscles and the presence of the knee-jerk depended on influences passing down from the encephalon, favoring these reflex phenomena. This influence was thirteen years ago attributed, on theoretical grounds, to the cerebellum by Dr. Hughlings Jackson, and to his view, with some modifications, Dr. Bastian adds his support. Dr. Jackson believes that the normal tone of the muscles is due to the balance of influences constantly passing down from the cerebrum and cerebellum, the former tending to diminish and the latter to increase the tonus of the muscles, and in this way accounts for the increased reflexes in cases of hemiplegia, the cerebral influence being cut off and the cerebellar influence no longer interfered with. There is evidence that this cerebral influence descends by the pyramidal tracts, and, assuming that these authors are correct in their views, it seems probable that the cerebellar influence descends in the gray matter. This is supported by the occurrence of increased reflexes in the cases of slow compression, where the gray matter is usually less damaged than the white, and by a case of Mr. Thorburn quoted by Dr. Bastian, in which there was hemorrhage almost confined to the gray matter in the cervical region, in which the absence of deep reflexes persisted, although the conducting functions of the white columns were to a considerable extent restored. Now that the matter has been so prominently brought before the profession, we may expect that facts will soon be forthcoming to settle definitely some of the disputed points to which we have referred.—*Lancet*, March 8, 1890.

THE PHYSIOLOGICAL AND THERAPEUTIC ACTION OF CREOSOTINIC ACID.

Paracreosotinate of sodium is a crystalline powder, of a bitter yet not decidedly unpleasant taste. It is soluble in 24 parts of warm water, without being deposited when cooled. According to the experiments of DEMME, made upon himself (*Wiener Medizinische Blätter*, February 20, 1870), doses of 45 to 60 grains produce no marked effect. About two hours after doses of 45 grains there is a feeling of great fulness of the blood-vessels of the skin, with light pulsation of the arteries, and moderate perspiration. The digestive functions are not, however, influenced. Twenty or thirty minutes after the administration of the remedy a chloride of iron reaction is obtainable from the urine, and the excretion does not disappear entirely until after twenty-four to thirty-six hours. The remedy so administered to children as an antipyretic in concentrated and in dilute solutions, with the addition of a little sugar and a few drops of brandy or fennel or licorice juice, is readily taken and well borne. The author claims that this solution, given in small doses, will often produce a favorable influence in cases of typhoid fever, especially diminishing the number and quality of the intestinal evacuations. Cases of fibrous lobular pneumonia pursue a perfectly normal course under its administration, while in catarrhal lobular pneumonia its administration appears to reduce the fever and to shorten the morbid processes.

In tubercular phthisis it will probably be found no better or no worse than many other antipyretics, reduction of temperature following the administration of a large single dose. Thus, 15 grains were given to a boy 12 years old as often as every five hours; 7½ to 15 grains were administered without producing any serious after-effect. The reduction of temperature amounted to about two degrees. In some cases marked collapse appeared, which was best combated by the administration of brandy and water. As is the case with so many other of the antipyretics of the series, creosotinate of sodium likewise produced an erythematous eruption.

In addition to reducing the temperature, it also slows the heart, while the tension of the blood-vessels is apparently increased, the pulse feels fuller, and the energy of the cardiac systole seems to be increased. The drug is well borne by the stomach and intestine. In its general effects the author compares this slowing with salicylate of sodium, since the effects produced by each are similar, and both are highly efficacious in the treatment of acute articular rheumatism.

BALSAM OF PERU IN PHTHISIS.

According to the Berlin correspondent of the *Medical Press and Circular*, March 5, 1890, Dr. Landerer has recently recommended the employment of balsam of Peru in a novel manner in the treatment of pulmonary phthisis. This was the intravenous injection of an emulsion of the balsam. The idea at the foundation of the recommendation was that the balsam reaching the blood-current, would be deposited principally in the parts affected, and there set up an inflammation that would act as a barrier against the progress of the bacillary disease. The conception of introducing an insoluble substance into the blood-stream was a daring one, and practically it has not been acted on. Dr. Opitz, of Dresden, has more recently taken up the subject, and thinks he has paved the way for a greater degree of acceptance by offering to substitute the interstitial tissue of the dorsum of the hand as the point of introduction in place of a vein. He claims that the emulsion is taken up by the lymphatics, and through them reaches the blood-current, and thence the affected parts of the lungs. The emulsion recommended by him consists of gum arabic, 1 gramme (15 grains), dissolved in 1 gramme of water; this is then rubbed up with 2 grammes of pure balsam of Peru and 2 of physiological saline solution (three-fourths of one per cent.). The mixture is then made up to 10 grammes by adding more neutral solution. It is, of course, sterilized before use, and it is scarcely needful to add that the injections are always painful. Whether the condition met with at autopsia of patients thus treated proves that the balsam of Peru really reached the parts of the lung affected is not yet proved. Until Dr. Opitz can prove that balsam introduced into the system in this way really reaches the affected parts of the lungs and lodges there, scepticism on the subject will not, we hope, be considered unreasonable.

THE PRODUCTION OF NEPHRITIS B BALSAM OF PERU.

The danger of the production of nephri in the administration of various balsams, p ticularly copaiba or styrax, is well known, b as yet only two cases of nephritis produc by the administration of balsam of Peru ha been reported. One of these cases was th of a painter affected with lead colic, in wh the external use of balsam of Peru in t treatment of scabies led to the passage blood and tube-casts in the urine. In t *Centralblatt für Klinische Medicin* for Fe ruary 15, 1890, Drs. W. Bräutigam and Nowack publish notes of twenty-two diffe ent experiments made on different patien as to the influence of balsam of Peru on t kidneys, making careful analysis each day the urine, especially as regarded amount, i color, specific gravity, presence or absence albumen, and general characteristics. Th balsam was given by the mouth in twenty p cent. oil emulsion or in pill form, at first wi wax, and afterwards with magnesia as an e cipient; it was given subcutaneously and l prolonged friction externally. These diffe ent experiments, in which the drug was give in the most varied dose, failed to confirm th opinion so frequently advanced as to the exis ence of any danger whatever from the actio of this balsam on the kidneys, nor were the able to detect that it produced any tendenc even to inflammation of the stomach or inte tine, or any action in the way of productio of excessive irritation of mucous membran Even the immense amount of nearly thre ounces was given in twenty-four days with out producing any reaction whatever. No di coloration, even of the urine, no action on th stomach or intestine. The absorption of th balsam of Peru was, however, proved by th fact that the reaction of the urine was highl increased in acidity through the presence c hippuric acid. The balsam of Peru is thu not comparable to copaiba or styrax in it action upon mucous membranes or kidneys.

The reason for this is, perhaps, to be found i the different percentages in the etherealoids since balsam of copaiba contains eighteen t eighty per cent. Balsam of Peru contain no oil whatever, but about fifty per cent. o benzoic ether, eight to ten per cent. cinnami acid, and about thirty per cent. resin. Never theless, as is well known, the balsam of Per is often adulterated with other volatile oils and such falsifications are undoubtedly i fault where balsam of Peru is claimed t produce inflammation of the kidneys.

NERVOUS AFFECTIONS IN THE COURSE OF WHOOPING-COUGH.

DR. TROITSKI gives in a Russian journal a short summary of three cases of whooping-cough accompanied by mental disturbances, difficulty in or loss of speech, and loss of power, or even paralysis, of certain groups of muscles. The first case was that of a little girl 2 years old, who, during an attack of whooping-cough complicated by bronchitis, was seized after some paroxysms by distortion of the eyes, blindness, and contraction of the arm flexors, quiet delirium and widely-distended pupils, Cheyne-Stokes breathing, diminution of the patellar reflex and of the sense of touch and of pain. At another time she became unconscious, and there were clonic contraction of the facial muscles and staring eyes, the pupils being dilated and not sensitive to light. Soon afterwards a general eclamptic condition with Cheyne-Stokes phenomenon came on, the attack lasting for an hour and a half, and giving place to stupor which lasted twelve hours, and during which the child could see, but did not understand, and called things and people by wrong names. These attacks gradually diminished, and in two months she was convalescent. The second case was that of a boy 3½ years old, who had severe headache and difficulty in thinking and speaking during the fourth and fifth weeks of the whooping-cough, which was complicated by pneumonia. His speech returned after three months, the whooping-cough lasting eight weeks. The hearing was much impaired. The third case was that of a little girl of 7 months old, who in the fifth week of her illness had two eclamptic attacks; and in the sixth week impairment of power in the right arm, the deltoid being especially affected. The arm became quite paralyzed after a fit of coughing. Dr. Troitski saw the child again after three months; the paralysis of the arm had disappeared without any treatment, the attacks of coughing having ceased when the arm became powerless. He considers that these conditions were due to disturbance of the circulation, and through that to morbid changes in some part of the brain.—*Lancet*, March 8, 1890.

A NEW SURGICAL DRESSING.

In a letter to the *British Medical Journal* for March 8, 1890, the Paris correspondent writes that M. ROUX proposes to abolish the ordinary method of dressings, which he regards as useless and troublesome, and to substitute a modified form of dressings. He has employed two methods with very good results, the *pansement suturé* and the *suture pansement*, both dressings being made with gauze saturated with sublimate, and again steeped in sublimate at 1 per 1000. The *pansement suturé*, which is applied exclusively to wounds which are not drained, consists of a band of iodoform gauze covering the suture line, and one or more bands saturated with corrosive sublimate or compresses. The last of these is fixed to the skin by a stitch at each corner. These dressings, which are easily applied, allow the regions surrounding the wound to be watched. If necessary they are wetted again with the solution at 1 per 1000 after a day or two. The *suture pansement*, employed for wounds which close by the first intention only, consists of a double band of iodoform gauze, from two to two and one-half centimetres wide, which is placed on the exterior edge of each lip of the wound, and enclosed in the cutaneous suture. The operator begins with a knotted stitch, and unites the basis of the adjusted fragments by passing the needle through a small india-rubber tube between each stitch. When he has reached the end of the wound he returns backward, adjusting the edges of skin in making them overlap. The thread is tied with the tail which remained free at the starting-point. In order to remove this dressing the band is raised by one of the corners, and all the threads which are discovered on one side of the cicatrix are easily cut. In removing the other half the portions of threads which are inserted in the flesh are carried away. M. Roux considers that these dressings may be substituted with advantage for the ordinary method employed. But, as he allows that they can only be efficient when applied in localities and by persons absolutely free from microbes, it cannot be expected that they will entirely replace Lister's dressings in the present day.

PANCREATIC DIABETES.

In a previous issue we referred to a theory advanced by DR. R. LÉPINE as to the production of diabetes from insufficiency of the pancreatic ferment. In the *Lyon Médical* for January 19, 1890, Dr. Lépine publishes a second communication on this subject, in which he refers to several experiments which seem to support his theory. He refers in the first place to an experiment performed upon a dog which had been allowed to fast for

thirty-six hours and in whom the pancreas was completely removed; the animal was allowed to fast twenty-four hours longer and was then killed by bleeding to death; his blood was collected and another dog was killed at the same time, but from whom the pancreas had not been removed, who had likewise fasted for sixty hours. The urine of the first dog contained sugar at the time of death. All the arterial blood was collected from these two animals and the sugar estimated in each case, both at the time of bleeding and half an hour later after defibrination and fifteen hours later after having been kept at a low temperature. The following figures represent the amounts of sugar found in 1000 parts by weight of arterial blood:

	Healthy Dog.	Dog without Pancreas.
Immediately after bleeding.....	1.17	3.30
Half an hour later.....	1.10	3.23
Fifteen hours later.....	0.72	3.04

The great proportion of sugar in the blood of the animal from whom the pancreas was removed is very striking, while the small amount of sugar which disappears in the blood of this animal as contrasted with the normal blood is also worthy of attention. Thus, while in half an hour the blood of the normal dog had lost 6 per cent. of the amount of sugar originally present, the other had only lost 2.02 per cent.; while at the end of fifteen hours the blood of the healthy dog had lost 15 per cent. of the original amount of sugar and the other only 8 per cent.

Dr. Lépine also mixed the blood of these two animals with the same quantity of starch mucilage, and found that the blood from the healthy animal was capable of converting a larger amount of starch into sugar than the blood of the dog from whom the pancreas had been removed, claiming that this fact proves that removal of the pancreas reduces the amount of ferment in the blood.

SALOL AND TERPINE HYDRATE IN COLDS.

In the *Medical News* for February 8, 1890, Dr. S. Solis Cohen writes that for the past two years he has been using a pill composed of 3 grains each of salol and terpine hydrate in the treatment of mild attacks of bronchitis, catarrhal fever, acute and subacute, the dose being 1 or 2 pills every two, three, or four hours, according to indications. Dr. Cohen writes that the results of this treatment are quite satisfactory, pecially in those cases of general cold, which there exists more or less muscu and articular pain associated with sympto of bronchial catarrh.

In the more severe types of colds, Cohen has found it well to combine w this treatment the use of some good al holic preparation of bark, or even quini and whiskey. Fluid extract of cocoa is a quite useful. When the nasal symptoms troublesome, they may be completely lieved by the judicious use of belladonna atropine, the dose to vary with different dividuals. It should be just short of t quantity required to produce full physiolo cal effect. In cases where severe lumb pains suggest renal congestion the prom administration of some simple alkaline uretic, such as solution of ammonium ac tate, with spirit of nitrous ether, is of bene

---

NARCOTIC EFFECTS OF ESSENCE OF NUTMEG.

Essence of nutmeg is generally consider to be a general stimulant; but recent obse vations tend to show that, although sm doses produce a certain degree of excitemen large ones have a powerful narcotic effe Cullet has reported a case in which a ma who had swallowed half an ounce of pow dered nutmeg became sleepy and stupi Savager has had a case where a child wh had chewed five large nutmegs was sent in a deep sleep, with relaxation of the muscle MM. Cadéac and Albin Meunier, who hav made systematic observations on the subje both on animals and on human beings, hav expressed their conviction that nutmeg should be classed among narcotics rath than among excitants. These observers foun that doses of 20 centigrammes, or about on third of the quantity of essence yielded b an average nutmeg, when injected into th venous circulation of a dog weighing fifte kilogrammes, produce almost immediatel symptoms of great fatigue, drowsiness, an torpor, so that the animal can be beate without its attempting to move; sometime also vomiting and involuntary defecatio occurs. When a dose of about four time this amount is given, there are some sign of excitement, and the animal becomes hy persensitive to light and noise; but its move ments, though strong, are stiff, and there i great want of co-ordination. After abou

alf an hour prostration comes on, and it inks away into a corner. With very large oses—about ten times as large as the first entioned—there is hyperæsthesia of the sen-orium, with muscular rigidity, the move-ents being characterized by great want of o-ordination; convulsions also occur, and egular voluntary movements only become ossible after about half an hour, when the nimal is completely exhausted. A dose of o centigrammes will kill a dog weighing ix kilogrammes in twelve hours, and a dose f 1.25 grammes a dog weighing nine kilo-rammes in an hour and a half. A dose of 5 centigrammes (about 10 grains), or even ouble that quantity, in the human subject roduces no general excitement, but merely slight headache, at first supraorbital, then rontal, and some diminution of cerebral and uscular activity. Essence of nutmeg pro-uces gastric and intestinal contraction; but t has little effect on the circulation, and, uch as it has, is of a sedative or depress-ng character, and consequently it is erro-neous to prescribe the drug as a "cordial." —*Lancet*, February 15, 1890.

PHYSIOLOGICAL ACTION OF SELENIOUS ACID.

The many striking analogies in chemical properties that exist between the compounds of sulphur and selenium suggested to MESSRS. CHABRIE and LAPIQUE a comparison of their physiological action. Some preliminary experiments have been made with selenious acid (*Compt.-Rend.*, ex., 152), which showed that it is reduced by a solution of glucose containing beer yeast, but not by one from which beer yeast is absent. In order to test further the behavior of the acid towards ferments, beef bouillon was placed in test-tubes, with varying quantities of selenious acid added, and exposed to the atmosphere at a temperature of about 25° C. It was found that a little more than 2 parts per 1000 of acid was required to prevent the fermentation of the bouillon under the influence of the ordinary atmospheric microbes, and that in the presence of a smaller proportion fermentation was set up, in which case the selenious acid underwent reduction. In other experiments it was ascertained that, unlike the sulphites, which, when injected into the blood, are oxidized into sulphates, and so rendered innocuous, selenious acid does not exercise a reducing power, but acts as an irritant poison. An aqueous solution of selenious acid, exactly neutralized with soda, was fatal to dogs when administered in doses of 3 milligrammes ($\frac{1}{20}$ grain) per kilogramme (two pounds) of body weight, the most remarkable symptom consisting in a very abundant bronchial secretion.—*Pharmaceutical Journal and Transactions*, February 1, 1890.

LYMPHADENOMA AND ITS TREATMENT.

At a recent meeting of the Paris Surgical Society (*Revue Générale et de Clinique et de Thérapeutique*, No. 47) M. RECLUS related the case of a young man who was the subject of lymphadenoma, a large mass of glands occupying both sides of the neck from the mastoid to the clavicle, and extending posteriorly beneath the trapezius muscle, and causing some dyspnœa. There were no swellings in other situations, no signs of tubercle, and no leucocytosis. As extirpation was out of the question, arsenical treatment was vigorously pushed, commencing with five drops of Fowler's solution daily, which was increased by two drops every day, when also injections (amounting to ten drops daily) were made of the same solution into the hypertrophied glands themselves. The injections produced small abscesses, which healed spontaneously; and at the end of two months, when as much as twenty-five drops per diem were being taken, and a notable diminution had taken place in the swellings, the treatment was suspended. It was, however, renewed from time to time, and finally replaced by phosphide of zinc, the result being most satisfactory, only two or three barely perceptible nodules remaining at the site of the previous tumor. M. Reclus gave particulars of two other cases similarly treated with success, and also of three in which the result was unfavorable. Although, then, he pointed out, arsenic could not be said to be absolutely specific, yet it is certainly very efficacious in lymphadenoma, of which clinically there are two forms,—the benign and the malignant. Surgical interference, he thought, was harmful, in that it was rapidly followed by recurrence, as shown by Verneuil, Trélat, and Bouilly. M. Quenu admitted the good results of the treatment, but pointed out that the diagnosis was uncertain, and that under "lymphadenoma" often were included very different conditions. M. Routier mentioned instances of benefit from arsenic; in one case the disease was only temporarily arrested. M. Verneuil

also alluded to the difficulty of precise diagnosis, and considered that excision was permissible in the benign cases of simple glandular hypertrophy. M. Terrier said it was impossible to diagnose at first between a lymphadenoma and a simple hypertrophy, unless recourse were had to microscopic examination and inoculations, and that early excision might not be followed by recurrence even of lympho-sarcomata. M. Trélat said that glandular tissues which were not secondary, cancerous, or syphilitic were either tubercular or lymphadenomatous, the former in the great majority of cases. Benign lymphadenoma was the same as simple hypertrophy, and should be excised; while the malignant form, which is rapidly generalized, should not, he, considered, be so treated.—*Lancet*, January 18, 1890.

USE OF RESORCIN IN WHOOPING-COUGH.

We have a number of times alluded to the results of Dr. Moncorvo and others as to the treatment of cases of whooping-cough by the topical application to the larynx of a one or two per cent. solution of resorcin. In this strength resorcin has practically no taste or odor, it does not irritate the mucous membranes, and is not poisonous, and yet is quite strong enough to be efficacious. The number of reports as to the favorable influence of resorcin in whooping-cough are rapidly increasing, the most recent being a paper by Dr. Farlow, published in the *Boston Medical and Surgical Journal* for February 27, 1890. He records several cases in which the ordinary treatment had no effect, and applications of cocaine, even up to twenty per cent., were of very little use. When the convulsive state of the disease was well marked, Dr. Farlow commenced the use of two per cent. solutions of resorcin, spraying it into the nose, the pharynx, and the larynx every two hours. The first day he found no change worthy of note, the next day the paroxysms were much less frequent, and by the fourth day the cough disappeared. Spraying was continued for a few days as a precaution, but there was no return of the cough, and the patients remained in perfect health. In one of these cases, he writes that he employed a preparation called cresolin, apparently an impure creosote, heating this over a lamp, and so filling the room with the fumes. Dr. Farlow refers to several cases occurring in his practice, and in them all he noted the most marked improvement from the application of resorcin. Dr. Farlow's method of employi this preparation by spraying seems preferab to the plan employed by Dr. Moncorvo applying it to the laryngeal orifice with swab, since by the former method he reach both the nose, the pharynx, and the laryn No symptoms of irritation, poisoning, or a constitutional effect were produced in any his cases.

In the discussion which the reading of th report evoked before the Boston Medical S ciety, several other physicians endorsed th claims of Dr. Farlow as to the value of reso cin, some of the members stating that th had employed this treatment in undoubt cases of whooping-cough, and that the reli was certainly very marked.

MAGNESIA ISINGLASS AS A SUBSTITU FOR PLASTER OF PARIS.

Dr. Josef Englisch states in a commun cation to the *Wiener Medizinische Wochs schrift* that in his experience isinglass is pre erable to plaster of Paris for rigid bandage on account of its lightness coupled with e traordinary firmness. It is, according to th author, especially adapted to cases in whic the patient is intended entirely or partly t follow his usual occupation. Its disadva tage is, that it takes a long time to harde and he mentions this as the reason why it ha not yet been generally adopted. To obviat this disadvantage, he has used for the last eigh years magnesia isinglass, for which he claim excellent results. Four parts of a solution o soda isinglass are by slow boiling reduced t the consistence of thick syrup, and then tri urated with one part of finely-powdere magnesia, till the mixture becomes whitis with a slight yellow tinge. The unrolle bandages are laid in this pultaceous mas well stirred in it, and then carefully rolle upon a wooden roller. The prepared ban dages must not be exposed to the air fo more than fifteen or twenty minutes, an before their application the limb is covere with a double layer of ordinary calico ban dage. No cotton-wool or flannel must b used. Four or five layers of the magnesi isinglass bandage are sufficient for the arm but five or six layers are required for th lower extremity. When the apparatus is in tended to remain undisturbed for a longe time than is usually the case, slips of th same material, or of thin leather or card board, may be inserted between two successive layers; not all together, as this would inter-

ge with the adhesion of all the layers. om ten to twenty minutes after its applica- on the apparatus ceases to be sticky, and in om three to ten hours, according to the mperature of the room, it is perfectly hard. is easy to cut, remove, and reapply the ap- ratus, so that it does not interfere with her therapeutic measures.—*Lancet*, January 8, 1890.

Reviews.

MANUAL OF SKIN-DISEASES. By W. A. Hardaway, M.D., Professor of Skin-Diseases in the Missouri Medical College, etc.
St. Louis: Theo. F. Lange, 1890.

This volume, which in size occupies a po- ition midway between that of the usual hand- ook and a complete treatise, contains much hat is valuable to the student and to the ac- ive practitioner. The subject is handled in thoroughly practical manner, with special mphasis upon diagnosis and treatment. The escriptions are free from ambiguity, and the herapeutic directions given with such clear- ess, that there is scarcely chance for mis- nderstanding. The author's own experi- nce is freely quoted, and around it is woven he suggestions of other dermatologists. The iseases are presented in alphabetical order, hich, while a departure from the usual ethod, has in books of this character many vident advantages. An appendix is added, containing formulæ and a diet-table. The ook may, in short, without reservation, be dvised as a safe guide in the management of hese troublesome diseases.

The paper and general appearance of the volume are not in harmony with the intrinsic merit of the author's part of the work.

THE PRINCIPLES AND PRACTICE OF SURGERY, BEING A TREATISE ON SURGICAL DISEASES AND INJURIES. By D. Hayes Agnew, M.D., LL.D., Professor of Surgery in the Medical Department of the University of Pennsylvania. In three volumes. Second edition. Philadelphia: J. B. Lippincott Company, 1889.

"Agnew's Surgery," the first volume of which appeared in 1878, was received by the medical profession and medical press with the just appreciation due to the merits of the work. The exhaustive investigations of the various subjects, and the practical character of the conclusions, have made the work a source of information for the surgeon and a book of reference for the student. A second edition was naturally to be expected, and the profession is to be congratulated upon the author being able to give the work his personal supervision.

The many changes in opinions, and the progress made in methods of treatment, during the past decade have been numerous in all departments of medicine, but more especially is this true in the surgical advances for the past ten or twelve years. That such changes and progress have not been overlooked and have been fully appreciated by Professor Agnew the above work gives evidence of, and a comparison of this edition with the previous one shows that there has been a complete revision of the work, with many valuable additions. The favorable views expressed by the press as to the merits of the first edition we then cordially endorsed, and now, after ten years of frequent consultation of its pages, we are only more confirmed in our opinion of its value. In our notice of this edition we will only briefly call attention to some of the additions the author has, from his experience and observation, considered necessary.

An important, indeed the most important, addition to Professor Agnew's work, is the chapter on "Antisepsis." It is the acknowledgement of the victory of this method. In the words of the author, "Antiseptic surgery has come to stay, and the sooner this fact is recognized the better for both surgeon and patient." While in the first edition this method of treatment in surgical practice was spoken of with favor, yet it was not believed the time had come for urgently advocating its exclusive adoption. That there may be no doubt in regard to Professor Agnew's opinion upon the value of antisepsis, we quote as follows in regard to micro-organisms and disease: "These facts applied to the study of surgical pathology have illuminated as with a sunbeam those morbid and often fatal processes which are commonly observed in the human body, especially in connection with wounds, and it is by such application that Lister has established a great principle, which will live while the world remains, which has already revolutionized surgical methods, and which makes its discoverer stand to-day the most conspicuous figure of the surgical world."

In the application of antiseptic methods to operations; the cleansing of the region of the body where the operation is to be performed; the preparation of the surgeon and assistants; the protecting of the seat of operation from

coming in contact with unclean substances, and the careful disinfecting of the instruments, are all insisted upon. The manner of accomplishing these necessary procedures are concisely and judiciously given.

The etiological factor in the process of suppuration is admitted to depend upon the presence of certain micro-organisms. "In the light of modern pyogenic literature, the presence of puritic organisms may be regarded as the true cause of suppuration." In answer to the questions of the possible formation of laudable pus, without the presence of these micro-organisms, and the presence of these organisms in the economy without suppuration occurring, Professor Agnew is inclined to accept the view of Rosenbach and of Klemperer, and considers it established, from their investigations, that healthy pus and micro-organisms are always found together; while it is also true that the same micro-organisms may exist in the lymph and blood without occasioning suppuration. Why this seeming contradiction can exist is explained upon the ground of the necessity of a favorable surrounding, in order that the micro-organisms may develop their pyogenic powers.

While the formation of pus is said to be due to the presence of these micro-organisms, yet Professor Agnew does not admit that such organisms are the only etiological factors in the process of suppuration. He writes: "These micrococci, growing and multiplying in the tissues, or in the discharges of a wound, and causing the formation of new and irritating products, may be accepted as one of the very common causes of inflammation and suppuration, though the same results may follow the presence of other irritants in different individuals." What the other irritants are, which may give origin to suppuration, is not clear. Peculiarities of tissue, imperfect use of germicidal agents, special diseases, or mechanical irritation, are said to be favorable conditions for the growth and multiplication of parasitic organisms. These are, however, not the true cause of suppuration, since investigation has demonstrated that there must be something more than foreign bodies or peculiarities of tissue. In a word, we believe there is but one cause of suppuration, and that is the presence of micro-organisms.

In the treatment of *chronic or tuberculous abscess*, the adoption of the germ theory of suppuration has necessarily demanded a change in the method of procedure. In the first edition it was advised that a "master inactivity should govern the surgeon." We are now very properly advised, since "we have come to understand the relation of suppuration to pyogenic organisms, the management of tuberculous or cold abscess does not materially differ from that proper to the acute form of the disease." It is very evident that Professor Agnew, at the time he wrote his first edition, was not satisfied with the method he then advised for the treatment of this affection. We find he then wrote: "I am disposed to believe that we have followed too blindly this venerable practice of abstaining from all interference with these abscesses and that, when feasible, it might be better to open them as soon as discovered, by which a large, pus-forming, blood-vessel surface is prevented; but my experience in this plan is too limited to justify any positive statement."

The question of *drainage* in the healing of wounds receives attention. Rubber and glass tubes are preferred; bone tubes have not proved satisfactory in the author's practice, and for capillary drainage either catgut or horse-hair may be used. The reasons given by Professor Agnew for the employment of drainage are that it prevents distention, inflammation, suppuration, and septic poisoning. As he writes, it is for the purpose of maintaining the wound in an aseptic condition. Many surgeons, at the present time, may take issue with these reasons, and reply that it is on account of the employment of drainage-tubes that the wound is rendered septic. In their opinion a perfectly aseptic wound requires no drainage. It is the use of drainage-tubes which makes primary union impossible. The exuded fluids from a wound they believe to be reserve fluids, and are absorbed into the system; by drainage they are lost, and become poisoned by micro-organisms. The success which has attended the treatment of wounds by the so-called organizing of the blood-clot, is evidence in favor of the uselessness of drainage, and the more recent introduction of the "dry method of operating," by Landerer, of Leipsic, is also further proof that it is advisable to do without drainage in aseptic wounds. It must be admitted by all that the drainage-tube is a foreign body in the wound, and must interfere with primary union. The perfect dressing for wounds would be one in which nothing is present to interfere with the healing process of nature; any foreign element, drains, or organisms are injurious; therefore, if the wound is aseptic, we do not require drainage to main-

ain it in this condition. Drainage, however, as its advantages, and is not to be neglected; ndeed, it is a most valuable method, if not bsolutely necessary, in the treatment of cer-ain wounds, where perfect asepsis is not pos-ible, or where for some reason the surgeon nticipates septic infection.

The section treating of "Hydrophobia" emains the same as in the first edition, ex-ept the addition of a short paragraph refer-ing to Pasteur's investigations, in which it is tated that, probably by inoculation of dogs ith an attenuated virus, the disease may be revented, and possibly the same treatment r man may render the virus harmless.

The author's experience in *traumatic epi-lepsy*, treated by trephining, since writing his irst edition, has increased from three to wenty cases, and, although his results have ot been so favorable as some other oper-tors, yet he believes the operation will eventually be more successful. The reasons hy results are not often more favorable is, n his opinion, first, the operation is post-poned too long after the premonitory symp-toms have been developed, what was at the beginning only a reflex action from dural ir-ritation, has later become central and or-ganic; second, too limited use of the tre-phine.

The progress made in operative surgery of the brain during the past ten years has been certainly great, and of such importance to the surgeon, that Professor Agnew has wisely felt the necessity of adding a section on "Cere-bral Topography," in which the views of in-vestigators in regard to the doctrine of local-ization of cortical lesions are concisely given. The rules to be observed in operations on the brain are most judicious, and should be car-ried out in every detail when such operations are undertaken.

The chapter on "Wounds and Diseases of the Abdominal-Pelvic Cavities and their Con-tents" has been rearranged, rewritten, and much added to. The general directions in laparotomy are given at the beginning of the chapter, and are those adopted by surgeons who recognize the necessity for absolute cleanliness in every detail in order to secure the best possible results. The directions for performing the operation for stenosis of either the pyloric or cardiac orifice of the stomach by digital dilatation (Loretas's operation) are given, with the remark, that such an opera-tion is only justifiable after all other means have failed to relieve the patient. *Pylorec-tomy*, owing to the great mortality which fol-lows it, is scarcely thought to come within the sphere of legitimate surgery. *Gastro-enterostomy*, although considered to be a more justifiable operation than pylorectomy, it is believed, if the mortality cannot be reduced, will probably receive but little favor among conscientious surgeons.

Many diseases which were, comparatively a few years ago, considered to belong exclu-sively to the province of the physician, are now transferred to the surgeon. Among such changes are *typhlitis* and *appendicitis*. In re-gard to surgical interference in cases of sup-purative typhlitis and appendicitis, Professor Agnew advises not "to act hastily," and "if, after waiting seven or eight days, no amelio-ration occurs, or if after such a lapse of time the local symptoms continue to increase, the time has arrived for operative interference." Exceptions to this rule are said to occasion-ally occur, and from their acute course de-mand earlier interference.

Under "Hernia" the various operations for its radical cure are given, including the more recent ones of Baker and Macewen. The conclusion reached by Professor Agnew is "of the various operations proposed and practised for the radical cure of hernia, not one can be said to be altogether satisfactory; that of Macewen, in my judgment, promises to be the most successful."

The treatment of simple fracture of the patella remains essentially the same as in the first edition. The employment of Malgaigne's hooks is condemned as strongly; and while antiseptic methods are said to have lessened the danger, when they are used, yet their em-ployment is not believed to be advisable. In reference to the operation of cutting down and exposing the fracture in recent cases and wiring together the fragments, Professor Agnew writes: "I feel constrained, however, to condemn the operation without qualifica-tion."

We have in the above notice briefly called attention to most of the additions which have been made to the second edition, and, as pre-viously stated, there have been but few omis-sions of any importance, so that the work, as a whole, may be considered to represent the views and opinions held, at the present time, of the principles and practice of surgery.

J. H. C. S.

THE PHYSICIAN'S LEISURE LIBRARY. A TREATISE ON FRACTURES. By Professor Armand Després. Trans-lated by E. P. Hurd, M.D.
Detroit, Mich.: Geo. S. Davis, 1890.

The above is a translation of Professor

Després's article on "Fractures," taken from the third edition of his "Chirurgie Journalière." This small volume, while it does not pretend to be a complete treatise on fractures, is certainly an original and very suggestive work. Many of the old methods of treatment are, in the author's opinion, wrong in principle and unsatisfactory in results. The foundation of successful treatment in fractures is good position and the prevention of movement. How best to obtain these, Professor Després has given us his experience, and Dr. Hurd's translation, with his additions, make a volume from which many useful suggestions may be taken.

J. H. C. S.

THE PHYSICIAN'S LEISURE LIBRARY. EDUCATION AND CULTURE, AS RELATED TO THE HEALTH AND DISEASES OF WOMEN. By Alex. J. C. Skene, M.D. Detroit, Mich.: Geo. S. Davis, 1889.

This is a very excellent, thoughtful, and judicious treatise upon a subject of growing importance. It bears upon the whole "woman question" of the day and of the future, and discusses it with care, and in guarded and refined language. It can be read throughout by the non-professional person, young or old, male or female, without such person being shocked or mystified, and yet with a clear understanding of its meaning. And unless this can be said, a book on this subject is quite useless, since the people to be reasoned with and converted from the error of their ways are non-professional, and must be neither bewildered by medical technicalities nor shocked by medical frankness; and while it is always well to call a spade a spade, other implements should not always be so boldly mentioned. Dr. Skene has succeeded admirably in this respect. While going thoroughly into topics which society has agreed to "taboo," he has used such care that none can take offence and accuse him of too much freedom, and has avoided also "sensationalism,"—the rock on which so many goodly volumes of well-meaning authors have gone to wreck and ruin.

E. W. W.

CHRONIC BRONCHITIS AND ITS TREATMENT. A CLINICAL STUDY. By Wm. Murrell, M.D., F.R.C.P., etc. London: H. K. Lewes, 1889. Philadelphia: P. Blakiston, Son & Co.

By this modest title the author places before the world some account of his observations and results in the treatment of one of the most chronic of chronic diseases, and one which destroys the usefulness of myriads before old age has come, making the middle-aged aged, making the aged decrepit and useless in the struggle of life. The author's mode, as described in this little book, is simply invaluable. On a large scale he has tested the remedies, new and old, which have been recommended for chronic bronchitis, and his observations, backed by his well-known reputation for careful and thorough work, will go far towards consigning some time-honored remedies to the dust-bin and pushing into prominence some new ones whose names are as yet unfamiliar to many a practitioner. The most useful part of his work, we think, is that included in the chapter on "The Ipecacuanha and other Sprays," in which he tells us how completely, in his hospital and clinical practice, the old routine cough medicine has given place to the atomizer, and how effectually ipecacuanha used by this method has benefited his cases. "Other sprays" include lobelia and tartar emetic. Of the latter he says, he "prefers ipecac," and the lobelia seemed of advantage in a few cases of bronchial asthma.

Tincture of cantharides, ℥i to ʒv, was also, he considers, of use in some very obstinate cases of chronic bronchitis. Jaborandi seems in no way superior to ipecac, while potas. iodid., two per cent. solution, gave satisfaction.

Tar and terebene and their allies form the subject of two chapters, in which the virtues of these remedies are carefully sifted. "Cheken and Cubebs" introduces us to the author's study of a new South American expectorant, in which he thinks he finds considerable virtue. In short, take the book throughout, it will serve, at least, to give the practitioner a fresh and vivid conception of the value of his remedies, and will impart to him some new and valuable ideas, which he may safely take, considering the reputation of the writer, on trust; and, if he wakes up to the value of ipecacuanha spray alone, he will find a vast improvement in a class of cases which generally tire his patience, till they become the patients of another.

E. W. W.

HISTORY AND PATHOLOGY OF VACCINATION. By Edgar M. Crookshank, M.B., Professor of Comparative Pathology and Bacteriology in and Fellow of King's College, London, etc. In two volumes. Philadelphia: P. Blakiston, Son & Co., 1889.

The author of these volumes seems to have labored conscientiously to extricate the

ruth, if it be possible, from the various documents pertaining to the subject. Up to the time of beginning his work, he had held, he tells us, the generally received doctrine concerning vaccination; but his faith in it was shaken by his investigation of an outbreak of small-pox in 1887. "While attending at the National Vaccine Establishment of the Local Government Board," he "was unable to obtain any exact details of the source of the lymph which was employed there." This also stimulated his curiosity, and led him to think seriously of the necessity for further and more accurate observation, while in 1888 he happened, at the Library of the Royal College of Surgeons, to find a parcel of manuscripts, which contained letters from Hunter to Jenner, and a manuscript which was thought to be that of Jenner's "Inquiry." Finding that it differed from the published "Inquiry," he discovered it to be "Jenner's Communication to the Royal Society." In it he was struck by "the small amount of evidence upon which Jenner had first ventured to propose 'vaccination' as a substitute for 'variolation.'" From this point he pursued the subject with all the aid obtainable, and visited Paris and Bordeaux. The result of all this labor is the present work, which contains, in very attractive form, about all the information accessible up to the present time.

We think the medical reader will receive somewhat of a shock from many of his pages, and will be by no means so clear as to what he is doing when he "vaccinates," as was his wont before. The author, we think, will furnish very substantial pabulum to the "antivaccinationists," though this seems unavoidable; but, as for himself, he is evidently a believer in its efficacy. While convinced that we are vaccinating from material derived from many sources, some very obscure, and that it seems as though vaccination performed with lymph drawn from divers directions was equally efficacious, Jenner's theory of the derivation of vaccinia from the horse grease takes on a far more probable appearance, and evidently is believed by the author to possess some foundation.

The account given by him of the experiments in India, based upon what he terms the "cow-small-pox" theory," is extremely interesting, as is also the record of his researches into the subject of horse-pox in France, where he went for the express purpose of study. Perhaps the most startling chapter in the book is that upon "Human Small-Pox as a Source of Vaccine Lymph," this lymph not being obtained by inoculating cows with small-pox, but by a constantly descending series of inoculations from one child to another with mild, variolous virus, which resulted in the final production of a virus giving a pustule very much like vaccinia, and with but little tendency to produce contagion in those brought into contact with the subjects of experiment.

The only deduction possible, after reading the work through, is, that if the facts are as stated, there must exist among the higher animals and man a wide-spread pustular disease, taking different names, according to the animal upon which it happens to be found. Often contagion among animals of the same family is capable of conveyance to other families by actual contact with an abraded surface, and is capable in every case of producing in the cow vaccinia, and in human beings, from the cow, vaccination; that it can also be conveyed from any one of the animal cases to the human being, and there protect him, more or less, from suffering from his own peculiar form of this pustular disease,—viz., small-pox; that after a series of inoculations on human beings, commencing at first with any one of these animal varieties, we arrive at the well-known vaccine vesicle, from whichever source we start. Thus, if we start with "horse grease," after a series of infants have been vaccinated with it, the resulting vesicle will appear just the same and just as typically like vaccinia as though we had started with sheep-pox or "goat-pox," and will be equally protective against small-pox.

There is also a glimpse shown, in a careful view of the evidence produced by the author, that there may be a tendency under certain circumstances for the vaccine disease to at times revert to variola, and that in wholesale vaccinations an air of variolous contagion may be produced, though this is by no means certain.

The reader can see, from this brief sketch of the author's work, how far evidently we are from a definite knowledge of what we are doing when we perform the simple operation of vaccination. Many more things he will see also as he reads the book, which he may not previously be aware of. He will find that from Jenner's time on, vaccination has, at times unexpectedly and mysteriously, suddenly become a very formidable thing; that the tendency to form "ulcers" was recognized and dreaded by Jenner; that Jen-

ner's mortality, even from his comparatively few experiments, was by no means *nil*, and that he took a very roundabout way to suppress it in his statistics, or what he considered as such. In fact, Jenner by no means looms up as a hero in the author's pages; but, as he gives us a whole volume of documentary evidence, we have to judge, we fear, about Jenner very much as the author does, who gives us a very beautiful picture of Mr. Benjamin Jesty on his first page, and accords to him in reality the honor which the world of late has been disposed to accord to Jenner alone. We may add that the work is well and expensively illustrated with colored plates, is beautifully printed on the best of paper, and becomingly bound. E. W. W.

Correspondence.

PARIS.

(From our Special Correspondent.)

Ouabain and Strophanthin as compared with Cocaine—Potassium and Sodium Iodides not Equivalent in Therapeutics—A New Expectorant—Hypnal, a New Hypnotic—Absorption of Rabic Virus—Traumatic Meningitis—Panbotano—Fire from the Thermo-Cautery—A Wedding.

The anæsthetic effects of ouabain and strophanthin have been further investigated by Dr. Gley, who has found them to show an interesting dissociation of sensibility. Recent researches have proved thermic sensibility to be distinct from sensibility to pain and to touch. But even in the thermic phenomena a difference can be noticed between the effects of cold and heat. H. Donaldson's experiments with cocaine have clearly demonstrated this distinction. Similar phenomena, differing but slightly, are observable with ouabain and strophanthin. Sometimes, especially with ouabain, the two forms of sensibility were noticed not to disappear simultaneously, the sense of cold persevering after tactile sensibility was lost. But the striking phenomenon was the reappearance of thermic sensibility before touch anæsthesia would begin to pass away.

Another effect of the local anæsthetics in question is their augmentation of intraocular pressure. One hour after 5 or 6 drops of ouabain or strophanthin solution have been, for instance, dropped into a rabbit's eye, the organ will much increase in size, and project out of the orbit, remaining for several hours in the same state. The same symptoms, it is known, are caused by cocaine. And, lastly, as also will happen with cocaine, repeated instillations of the solution will bring on incipient opacity of the cornea. Another salient which should not pass unnoticed is the fact that chemicals in no way alike, and proceeding from plants widely different botanically, should possess physiological properties so nearly similar.

On the other hand, that substances closely related, chemically, may act in a very different manner, is nothing new, and the striking illustration afforded by the very unlike effects of arsenic and phosphorus compounds, is probably familiar to all. Yet therapeutists are too often ready to forget the warning and follow chemical or botanical analogies. Dr. Laborde, at a meeting of the Academy of Medicine, strongly protested against such a tendency, and quoted a number of examples. Iodide of sodium, for instance, has often been proposed, and is now and then used, in place of the potassium salt. But the two chemicals will not act alike. Potassium iodide will notably increase blood-pressure, and occasion cerebral symptoms not obtainable with sodium iodide. In consequence, it is not indifferent at all which of the two salts is given. In heart affections sodium iodide has recently been administered in enormous doses without harm, it is true, but without much success; and one of these cases having come under Dr. Laborde's notice, a change to potassium iodide and smaller doses afforded immediate relief. The same difference can be observed with the chlorates. Sodium chlorate, being more soluble, has been recommended by some in place of potassium chlorate. But the physiological effects are not the same, since 3 to 4 grammes (45 to 60 grains) of the potassium salt will suffice to cause in a dog symptoms of intense asphyxia, while 10 grammes (2½ drachms) of sodium chlorate have scarcely any effect. And the therapeutic difference is no less marked, as potassium chlorate will dissolve false membranes and sodium will not. *A fortiori* bromides must not be substituted for iodides, cinchonidine for quinine, and so on through the list. But there are few now willing to go so far, much as some dealers would like to find a market for their cinchonidine.

A new expectorant has made its appearance, on the recommendation of Dr. Schoengut, of Vienna. The drug is the bark of the *Nartegamia alata*, a shrub growing in the Portuguese Indies, and well known to botanists, be

herto untried in therapeutics. The preparation used is the tincture of the dry bark,—to 5, probably,—which is to be given as llows:

Tincture of naregamia, gtt. xv to xlv;
Cherry-laurel water, ʒiiss to ʒviii. Mix.
Dose.—10 drops every hour.

The medicine has been found efficacious as expectorant in affections of the respiratory rgans, and especially beneficial in cases accompanied with scanty secretions and much oughing, or when there is an abundant discharge of viscous and bloody sputa. The effect s been excellent in heart-diseases with catarrh, also in pulmonary emphysema. Tuberulous patients, on the other hand, were but mporarily improved. In favor of the new rug it is claimed that it affects neither circuation, blood-pressure, nor digestion, and is not oisonous.

The next new remedy is of chemical origin. hen antipyrin and chloral are brought into ontact, an oily liquid results, in which, after while, crystals are formed, and the new compound has a comparatively bland taste, very ifferent from either constituent. The reaction s not a new one by any means, but the therapeutic value of the chemical scarcely appears o have been fairly tested. At least the divergence of opinions is too wide to be definitive. According to H. Ludwig Reuter, the crystals are inert, and French therapeutists, naturally conservative, have contented themselves with recommending that chloral and antipyrin be not administered together. But, at the last meeting of the Therapeutic Society, Dr. Bardet reached a very different conclusion, based upon a number of experiments. He said that hypnal—and may heaven's blessing be upon his head for the abbreviation—is merely the trichloracetyl-dimethylphenyl-pyrazol obtained when chloral and antipyrin have combined to form the crystalline compound above alluded to. In good justice, it should be mentioned that Herr Reuter, being a German, gives for the same compound a similar name, with two syllables more. Well, hypnal, according to Dr. Bardet's experiments, far from being inert, possesses marked sedative and hypnotic properties. In doses of 1 gramme (15 grains) it was found, in twenty-two cases under observation, to induce easy sleep, and proved especially useful in sleeplessness consequent upon pain or coughing.' As it is neither caustic like chloral, nor irritating like antipyrin, it is easily tolerated by the stomach, while its faint taste is an advantage in infantile practice. To complete the subject, it should be added that Mr. Reuter only experimented with rabbits, and never pretended to draw absolute conclusions applying to men. M. Bardet, on the contrary, tried it with men, a circumstance sufficient in itself to explain the apparent contradiction, since many nowadays believe there is much truth in that legendary story of the medicine that cured parsons and was death on carpenters.

The absorption of rabic virus presents many anomalies, showing how mysterious some points still remain. At a meeting of the Biological Society, Dr. Galtier, of Lyons, related that he had concluded a long series of experiments on the subject, and gave the following summary of the results: On painting the mouth with a virulent solution, he got four cases of rabies out of thirty experiments, and two out of thirty with stomachal injections. The respiratory organs proved most sensitive, fifteen out of thirty experiments having resulted in death by rabies. The conjunctiva gave six out of thirty, and the genito-urinary membrane three for twenty. Dr. Nocard, on the contrary, gave it as his opinion that the mouth and digestive organs are, when in sound condition, proof against rabic inoculation, and related the following illustration: "Lately I had a fox which I fed almost regularly with the brains and marrow of dogs and foxes dead from hydrophobia. Although the animal ate thus several kilos of highly virulent rabic material, he never caught the disease, and never even became vaccinated. For soon after, rabic virus having been inoculated, the fox died with all the symptoms common to the canine species." But a strange case is one observed by Dr. Dujardin-Beaumetz. The patient, a woman, had a dog which she ordered to be killed because it bit a child. Yet the animal was not considered mad, and never bit its mistress. Whether it licked her hands or face did not appear. Nevertheless, the woman undoubtedly died of rabies, as inoculations were made from her rachidian bulb at the Pasteur Institute, where, by the way, she never went for treatment. This is not the first instance of hydrophobia contracted through association with sick animals.

Much to their regret, physiologists cannot practise vivisection on men unless they operate on their own persons, a proceeding scarcely satisfactory because it disturbs the observer's equanimity. In consequence they make the most of accidental injuries which may confirm the theories based upon animal vivisection. Dr. Netter, some four years ago, observed that, on trepanning rabbits and introducing

under the dura mater pneumococci cultures, suppurative meningitis will almost invariably result. There was, however, no proof that such would be the case with men, when he was the other day called upon to attend a post-mortem on a man who had committed suicide by shooting himself in the mouth, and died after lingering eighteen days. The bullet, it appears, penetrated through the palate and the basilary process, and lodged in the brain. But the interesting feature of an otherwise commonplace occurrence was the existence of suppurative meningitis, due, no doubt, to the introduction of pneumococci transferred by the bullet from the mouth to the brain. The identity of the meningitis was proved beyond cavil by microscopic examination, cultures upon agar-agar, and inoculations to mice. As to the pneumococci, the proof was equally positive, the microbes having been found in the nasal mucus of the deceased, and identified by cultures and inoculations. The accident, Dr. Netter concludes, presented all the conditions of his own previous experiments on rabbits, and shows that traumatic meningitis may be caused by the same microbes as spontaneous suppurative meningitis, and also that some microbes, harmless in the bucco-pharyngeal cavities, may become, under special circumstances, dangerously infectious.

Panbotano, or panbolano, as some call it,—*Calliandra Houstoni*, a new bark from a Mexican tree of the Leguminosæ family,—has, of late, been introduced here as a cinchona substitute. Some efforts seem to have been made to push it as a "specialty." But Dr. Dujardin-Beaumetz having reported to the Academy of Medicine that chemists failed to discover any alkaloid or glucoside in the drug, the new venture has not proved a success.

A rather unusual accident has occurred at the Beaujon Hospital. A patient under treatment for a leg affection was to be cauterized with the thermo-cautery, when the medical *externe* in attendance accidentally set the wadding afire with the instrument, and the patient, a female, had her hands dangerously injured while trying to remove the dressing. A judicial inquest is to be held over the accident.

To end with a piece of news which probably will interest readers of the THERAPEUTIC GAZETTE, Mlle. Marie, daughter of Dr. Dujardin-Beaumetz, on March 19, married Dr. Forgue, an aide-major in the Second Engineers, and fellow (*professeur agrégé*) of the Montpellier Faculty of Medicine.

PARIS, March 20, 1890.

BERLIN.

(From our Special Correspondent.)

A very notable innovation in the fie of electro-therapeutics has been discover by the Berlin physician, Dr. Bröse, whic many physicians have greeted with a partic lar degree of pleasure. This gentleman h found the means of making electricity enge dered by the dynamo-machines serviceab in the province of medicine, including ele tro therapeutics and electro-diagnosis, ele trolysis, galvano-caustics, illumination, a the use of electro-magnets in the eye clini It was on the same principle by which t Berlin electrical works for lighting the ma streets were enabled to introduce illuminati by electricity into dwellings.

The current is conducted into the speci room of the physician, and then,—saying possessed an electro-motor force of one hu dred volts,—by means of various contr vances, it may be so changed that it ca be gauged for medical purposes quite as we as that formerly engendered by elements.

The current necessary for electro-therape tics and electrolysis possessed a high degre of constancy, and can be diminished by mean of certain preparations to the amounts re quired.

The induction current also does goo work. In spite of the apparently gre strength required for the galvanic use electricity (as much as two hundred mill ampères), the consumption of electricity b this apparatus is so small that it cannot b compared in its cost to that obtained b elements.

Bröse will himself shortly publish an ex haustive work on the results obtainable by thi apparatus, and will give a full description o it. The description of this new invention wil be very welcome, since every physician wh is obliged to work much with electrical ap paratus must find that in the batteries of ap proximated elements a so frequent cleansin and renewal of the elements, or part of them is necessary as to make their use a matte of much trouble and of great expense Neither can the dry elements, lately so much extolled and praised, be regarded as the mos perfect method of generating electricity. Al though I personally have had no experienc with the above to argue from, I am still o the opinion that its constancy, and at the same time its usefulness, has only one limita tion. This apparatus must also be renewed at certain intervals, so that its use may, in its turn, be quite expensive.

Furthermore, the cleansing of the elements mostly used (chromic acid, with zinc and carbon plates), when undertaken personally, requires much time and care. Otherwise the cleansing is assigned to servants, and in that case one cannot be perfectly sure that the work will be thoroughly performed, and often the battery fails at the moment it is about to be used on a patient.

One of the most important of the organic functions is indisputably digestion. Numerous experiments have been tried on men and animals in order to gain insight, by the disclosures, into the many conditions not yet clear, yet much remains to be done before all the riddles of this so important a factor in the living organism shall have been solved.

In the case of intestinal digestion especially, the duration of the intestinal absorption has not yet been discovered.

The latest experiments tried in this direction (by Dr. Munk) have given most interesting results, which were communicated to the Physiological Society of this place.

An 18-year-old girl with elephantiasis of the left leg, widening of the finest lymphatic vessels, and a lymphatic fistula, gave the desired opportunity for investigation. From the fistula a clear fluid poured when the patient was fasting; after the ingestion of food, a milky, viscid, spontaneously-coagulating, rich fluid was obtainable, which investigation proved to be of the character of chylous lymph. The fluid poured out at the height of fat digestion showed the characteristic peculiarities of chyle, very finely divided fat, and here and there small fat drops.

Within the next thirteen hours following the ingestion of fat there appeared, in some twelve hundred cubic centimetres, about two-thirds of the same again.

At the height of the digestion of fat, the fatty contents of the blood were not visibly increased by the great quantity of fat in the lymph. The fat must therefore have nearly all passed out through the fistula.

By this observation the duration of the absorption of fat by the intestines may be determined.

After the ingestion of oil the absorption of fat commenced in the second hour, attained its maximum in the fifth, and then began slowly to decline. Yet the lymph contained in twelve hours five times as much fat as under conditions of hunger.

Fat more difficult of solution (mutton suet) retarded the absorption, first reaching its maximum in seven to eight hours.

The fat in the chyle was at the same time identical with that ingested.

When fat was injected per rectum, only four to five and a half per cent. was absorbed. The experiment was further tried with lactic acid prepared from rapeseed oil. After the ingestion of this there flowed, after the fourth hour, a milky lymph, in which neither the free, fatty acids nor the soap were especially increased. But fatty acid was obtained from the saponified chylous fat, which was composed chiefly of lactic acid.

Upon admixture with glycerin it formed also the neutral fat in question and appeared in the chyle.

After a rich diet of carbo-hydrates the sugary contents of the lymph was only in a small measure increased during the following hour.

After the ingestion of albumen, in the shape of meat, the lymph became neither richer in albumen, nor did it take even a portion of it up. Neither the sugar nor albumen of food passes from the intestines through the chylous ducts into the blood. Assuredly the passage of these substances into the blood is accomplished directly through the mucous membrane of the intestines.

In regard to the position of the Langenbeck House affairs, the recent report of Professor von Bergmann is at hand; a matter of concern also to our American colleagues, who take such a meritorious and devoted interest in the erection of the building.

The site chosen for the Langenbeck House, on Ziegel Strasse, next to the Surgical Clinic, has already been purchased.

The front of the building will be placed on the water-side, opposite the University Clinic for Women, while the portion towards Ziegel Strasse will be applied to the extension of the Surgical Clinic (removal of the Polyclinic, etc.).

For the building of the house a sum is wanting, which is covered by large donations and by a bequest from the late Empress Augusta. During her lifetime the Empress Augusta pushed on the accomplishment of the plan by strenuous efforts, as it was written of in one of Von Bergmann's works: "The last charitable institution of the Empress Augusta" (*Berlin Hirschwald*). It is certain that the Langenbeck House will be the profitor by this.

On April 1 a special surgical station will be erected in the Moabit City Hospital. This

is the outcome of a pressing necessity, since formerly only very acute cases were admitted to this hospital, while other patients were sent elsewhere. As the Moabit Hospital contains more than eight hundred beds, this change will relieve Dr. P. Guttmann of much burden, as he was the only chief. The command of the new department for surgery will be taken by Professor Sonnenburg.

Considering the superfluity of our preparations of medicines, the recommendation of a new drug is truly a weighty undertaking, especially at a time when the dietetic-hygienic methods of treatment, massage,—in short, the whole army of methods embraced under the title of natural procedures, are more and more on the ascendant.

The opinions expressed in regard to a new drug—"aristol"—are so full of praise that it appears certain the drug will be given further trial as to its composition, its usefulness, and method of action. Aristol is a dithymol-diiodide, and is formed through heating a solution of potassium in potassium chlorate together with an alkaline solution of thymol, the new compound falling down as a reddish-brown amorphous precipitate. It is a fine, reddish-brown, odorless powder, is insoluble in water and glycerin, slightly soluble in alcohol, readily in ether. Warmth and light produce changes in the chemical composition of the preparation, which must be borne in mind when attempting to preserve it.

The action of the medicine seems to be very pleasant; it possesses no toxic qualities.

It has as yet been tried only in dermatological practice, but it has here given very good results; for example, in psoriasis, where especially its non-toxic qualities, as opposed to chrysarobin, place it at the head.

In other derm affections aristol acts quite as well as other drugs, without being so irritating. The result has been very favorable in the case of ulcus cruris, more doubtful in lupus.

The preparation certainly deserves a trial in many cases.

It is hoped that the good results will be further extended, so that the view of its being useful in surgery and gynæcology may not be proven false. It is applied as a ten per cent. ointment (with lanolin), and as a ten per cent. paste (with starch and zinc).

BERLIN, March 15, 1890.

LONDON.

(From our Special Correspondent.)

In my last letter I dealt with some of th aspects of the contagiousness of consumptio and showed that, although many facts seeme to indicate that phthisis was contagious, y the question could not by any means be co sidered as settled. This question naturall arose from Koch's discovery of the bacill tuberculosis, but there is another questio which has occupied a large measure of atte tion on the part of the medical professio during the last seven or eight years,—this the antibacillic treatment of phthisis.

If the bacillus is the cause of the lesion i phthisis and in so-called scrofulous disease it is a ready and easy conclusion to mak that a treatment which would kill the organ ism would also cure the disease, because th healing of the lesion produced by the bacill might readily be left to nature. On this sup position we should have to consider phthisi as an entity, the only cause of the lesion bein the bacillus. It is on some such hypothesis a this that the antibacillus and antiseptic treat ment of phthisis is based. Nearly every anti septic has been tried in the treatment of thi disease in a variety of ways: by inhalation by the mouth, by the rectum, and subcutaneously. By inhalation it was hoped that the antiseptic only would pass down the bronchi, come near the consolidated patch, and be absorbed into it; by the mouth, the drug being absorbed into the circulation, the blood-stream would carry it to the affected part; so, also, in administration subcutaneously; by the rectum, the drug, being absorbed into the portal venous system, would enter the right side of the heart and thus be carried directly to the lungs. Few people would now contend that when an antiseptic is administered by inhalation it would enter a patch of phthisical consolidation. There are many reasons which might be adduced against such an occurrence, both pathological and physiological reasons. In the first place, a mass of consolidation due to recent deposit of tubercle is not directly connected with the bronchial tube, or it would be better to say the majority of the masses of consolidation are not so connected, since, of course, a peribronchial tuberculosis is not infrequently observed. A drug administered by inhalation is absorbed by the vessels of the bronchial tube, and these do not lead into the lung-tissue, but away from it, passing to the root of the lung. And, moreover, a volatile drug taken in with the respired air is not actively carried farther

to the lung than the normal tidal air, if it carried so far, so that if it got to the end the bronchial tube it would have to diffuse the rest of the air in order for this result be accomplished. This seems a strong reason against an antiseptic drug, taken by inhalation, ever reaching the phthisical consolidation. And, as a matter of fact, there no very cogent evidence to be adduced in favor of phthisical consolidation being beneficially effected by the inhalations of drugs.

Of antiseptics which have been tried, creosote, turpentine, oleum picis sylvestris, and iodoform are the chief to be mentioned. There is no doubt that beneficial effects have been noticed in cases of phthisis from the use of these inhalations. Of creosote especially much has been written, and most writers seem to be of the opinion that it is beneficial. The explanation of the good effect of creosote and other antiseptics when inhaled in phthisis is probably not far to seek. Such drugs keep the secretion in the bronchial tubes sweet; they tend to diminish chronic bronchial secretion (a common accompaniment of chronic phthisis) and act as stimulant expectorants, and if a phthisical cavity communicates with a large bronchus, the drugs may keep such cavity aseptic. Some practitioners favor iodoform as an inhalation; but its use in phthisis of the lung is more than doubtful, since it may increase the discomfort of the patient. In England, the opinion is fairly general at the Special Chest Hospital that inhalations of antiseptics do not effect the phthisical consolidation, for the reason that the drug never gets to the bacilli. It is otherwise where such a drug as iodoform can be placed directly on the tubercular patch, as in tubercular ulcers of the larynx and in scrofulous glands; here iodoform (and iodol) undoubtedly does good.

One word may be said of the treatment of phthisis by the inhalation of hot air. The tubercle bacillus cannot withstand a heat of 42° C., and it was supposed that the inhalation of superheated air (200° C.) might prove beneficial in phthisis. An apparatus was patented for this purpose; and, as usual, the treatment found stanch advocates, who stated that under the use of hot air the bacilli disappeared from the sputum, the patient lost his cough, gained weight, etc. It was gravely and publicly maintained that this result was due to the hot air entering the air-cells and heating the phthisical patch to a temperature which would kill the tubercle bacillus. Common sense reason might be brought forward against the idea that the lung-tissue could withstand a temperature of 100° C., as one advocate seriously stated; but it has been proved by direct experiment on animals that when air at a high temperature is inspired it does not raise the temperature of the lung-tissue. The hot-air treatment of phthisis may be safely confined to oblivion.

The drug is more likely to reach the tubercular lesion in the lungs if it enters either the general or the pulmonary circulation, which it may do either when given by the mouth or rectum or when injected subcutaneously.

Of the drugs used by mouth, creosote finds its advocates; it has to be used for months, and as much as ten to fifteen minims require to be taken daily, after commencing with the usual small dose. In the hands of impartial practitioners it has not proved of much service and is apt to derange the digestive functions considerably.

Some of the active principles of elecampane (especially helenine) have been recommended for tubercle. Marpmann performed some experiments which tended to show that when administered to animals these substances prevented the development of tuberculosis after inoculation with tuberculous material. It remains to be seen whether they will prove of any service in man.

Phenylacetic and phenylpurpuric acids were shown by Dr. Burdon-Sanderson to be powerful antiseptics, and they have been recommended for phthisis: no deductions can be drawn, however, from the trials as yet made.

Subcutaneous injections of substances in phthisis may be dismissed in a few words, since it has been found that there is so much local irritation following the injection that the treatment has soon to be abandoned. There is also one great drawback to the methods of trying to reach the phthisical convolutions with antiseptics through the circulation, and that is that such substances are probably readily decomposed in the body; and that when, as in the case of iodoform, they are in part in an undecomposed state in the circulation, they are present in a dangerous amount and produce toxic symptoms.

At present, it may safely be said that the antibacillic treatment of phthisis is a failure. It is impossible to say why some cases get well, but that they certainly do with ordinary treatment, fresh air, cod-liver oil, tonics, and they get well just as rapidly as those treated with antiseptics. It may be that an

antiseptic will be discovered which is harmless to the human body but is powerful enough to kill the tubercle bacillus when introduced into the circulation, but at present such a substance is not known, and practitioners are justified in relying on general hygienic measures and tonics in the treatment of the disease.

Notes and Queries.

ABRUS-POISONING.

Abrus-poisoning by the seeds of the jequirity, or the *Abrus precatorius*, first came into prominent notice about ten years ago, and since that time numerous investigations have been made into the nature of the poison. The conclusions derived from these researches have been curiously conflicting, and it is but recently that something definite has been ascertained regarding the active principle or principles, in stem and seed, to which the jequirity owes its poisonous qualities. The *Abrus precatorius*, it will be remembered, belongs to the natural order Leguminosæ; it is one of the most common plants in India, and it is called the Indian licorice plant. It takes a position in the Indian Pharmacopœia as a substitute for licorice; an example, among many others, that could be quoted of the obsoleteness and need of revision of the Indian Pharmacopœia. The effect on a child who had its gums lanced, and who was given to suck the stem of the *Abrus precatorius*, instead of a piece of licorice, could, in the light of the numerous investigations that have been made, be easily predicted.

The seeds are spherical, smooth, sometimes of a bright, shining red color, sometimes white with a black mark at the eye, or, more rarely, black with a white eye. Both in India and Brazil they have been used as a popular remedy in ophthalmia, their action being that of a local irritant. A watery infusion of the seeds produces severe inflammation of the conjunctiva when a few drops are placed in the eye, and is in the highest degree fatal to an animal when injected under the skin, death ensuing within a short period. Dr. Warden, of the Calcutta Medical College, who, first by himself, and then in conjunction with Dr. Waddell, carefully investigated the action and proximate composition of the poison, points out in his notes on the indigenous vegetable poisons that, in the Hindoo system of materia medica, the seeds of the *Abrus precatorius* are classed with what are called the seven minor poisons. These are opium, datura, roots of *Gloriosa superba*, roots of *Nerium odorum*, juice of *Calatropis gigantea*, and *Euphorbia nerifolia*. In fact, the dangerous properties of the seeds of the *Abrus precatorius*, when inserted under the skin, seem to have been long known to the natives of India, and this knowledge has been frequently made use of by men of the chanar class to poison cattle for the purpose of procuring hides. To Dr. Center, of Lahore, probably belongs the credit of first drawing attention to the fact that the jequirity-seeds were used in this way for cattle poisoning. It appears that the seeds are pounded, moistened, and shaped into needles, and when these are dry they are fixed on a sort of handle. The cattle are spiked with the needle-shaped seeds, and soon succumb from the effects of the poison. Unless the animals are carefully skinned and the inside of the hides examined, detection is almost impossible.

It was thought at first that the poison was due to the smearing of snake venom on the seeds. Dr. Ewart, however, soon disposed of this theory by showing that the poisonous effects in no way resembled those of snake-poison. None of the nerve symptoms, such as local paralysis of the respiratory muscles, convulsions, and unconsciousness immediately preceding death, which accompany snake-poison, were present, while rapid and extensive cellulitis, inflammation of the sympathetic glands, rise of temperature, and great depression of the vital powers, ending in death, commencing at the heart, were the characteristics of jequirity-poisoning. The question as to what the toxicity was due seems to have remained unanswered for some time until a bacillus was found, which was called the jequirity bacillus, the nature of which was investigated by Sattler, Corneil and Berlioz. The bacillus theory, however, was not destined long to hold its own, but that it gained so much support shows to what absurd lengths a theory based on insufficient grounds or experimental evidence may be carried when preconceptions are in its favor.

To Dr. Klein is due the credit of being the first to throw doubts on the bacillus theory by showing that the poison was permanently destroyed by momentary boiling of the infusion; but it was reserved for Dr. Warden and Dr. Waddell, by their careful and well-conceived experiments, to finally and effe

ily dispose of the bacillus nature of the rus poison. They most clearly demonated that the poisonous activity of the eds were due to a proteid body, which they lled abrin, and this abrin they considered be closely allied to egg albumen and the getable albumens. These experiments of rs. Warden and Waddell were carried out 1884. They do not appear, however, to ve settled the question altogether, for, ing to some discrepancies noted, two other bservers have entered the field of research, d taken up the subject where Dr. Warden d Dr. Waddell left it. The discrepancies, hich happened to be of a chemical nature, duced Dr. Sidney Martin and Dr. R. N. olfenden to undertake a series of investiations into abrin, and to study its physiogical action. The results of their investiations have been recently communicated to e Royal Society, London. It appears that e abrin of Warden and Waddell can be still rther analyzed, and is found to consist of o proteids, to which the experimenters ve given the names, respectively, of paraobulin and albumose, and that each of ese proteids has practically the same physiogical properties on pigeons. Each proces severe conjunctivitis when applied to e eye; and, when subcutaneously injected, ch causes local inflammation, œdema, and chymoses and gastro-intestinal irritation, ith extrusion of fæces and blood. The eneral symptoms being, first, a great fall of ody temperature and a condition of stupor ading in death. The activity of both these roteids is destroyed by moist heat. In soution the activity of the globulin is destroyed at between 75° and 80° C., and that of the albumose between 80° and 85°. Drs. Martin and Wolfenden, moreover, are of opinion that the abrus poison resembles snake venom in chemical composition, in the local lesions produced, in producing a fall of temperature, in causing semifluidity of the blood after death, and to some extent in the effect of moist heat on it, though they admit that the abrus poison is much less active than snake venom. In reference to this point of resemblance to snake venom, Drs. Martin and Wolfenden do not state whether these opinions are founded on any experiments on pigeons poisoned with snake venom. Dr. Ewart's experiments in dogs seemed, on the other hand, to show there was a marked difference in symptoms and in the centres acted upon by the two poisons.—*Indian Medical Gazette*, November, 1890.

THE ACTIVE PRINCIPLE OF THE CONDURANGO BARK.

PROFESSOR R. KOBERT states (*Schmidt's Jahrbücher*, 1889, No. 9) that he has found two glucosides and a resin in condurango bark, the remedy which at one time enjoyed considerable reputation in the treatment of cancer. The so-called "condurangin" is a mixture of glucosides which in watery solution coagulate when heated to 40° C., and when the watery solution is precipitated with common salt, in these respects resembling an albumen. In hot decoctions no trace of condurangin is to be found after filtration. This glucoside possesses a marked action upon the nervous system. In small doses it produces an ataxic gait, with increased skin and tendon reflexes. Larger doses produce violent clonic convulsions, with subsequent paralysis. In the earlier stages of the poisoning there is marked salivation in carnivora, but no pathological changes can be recognized on post-mortem examination. The fatal dose for carnivora amounted to ⅓ of a grain for every two pounds of body-weight, while in herbivora it is about three times as much.

SALINE INJECTIONS INTO VEINS IN DIABETIC COMA.

The striking case related by DR. DICKINSON at the last meeting of the Clinical Society is somewhat encouraging as to the value of intravenous injection of saline fluids in cases of diabetic coma, although, unfortunately, a fatal issue eventually ensued, for after the first injection—of 106 ounces—the patient regained consciousness to a very complete extent. The importance of such a respite may occasionally be very great,—for instance, in the case of one who is attacked with diabetic coma without having made his will. It is something to know that by this method the coma can, temporarily at least, be made to pass away. The subsequent course of Dr. Dickinson's case is equally instructive. The patient relapsed into coma, and resort was again had to the procedure which had already proved of service. But this time the amount of saline fluid received into the circulation was actually more than the estimated average total amount of blood in the adult body. In spite of the state of plethora which so heroic a course must have produced, the patient once more regained consciousness. Dr. Dickinson's conclusions, that 100 or even 200 ounces of saline fluid may in such cases be introduced into the circulation with advan-

tage, but that the benefit to be gained thereby can only be temporary, were doubtless justified by the experience in this case. Perhaps the same end might be obtained more rapidly if the injection were preceded by venesection, so as to secure a greater degree of dilution of the blood with a comparatively small amount of the diluent. The practice of saline injections in diabetic coma has, as Dr. S. Mackenzie remarked, been frequently employed, but so far as we know, in no case with permanent good results. Indeed, few patients submitted to this treatment have, as in Dr. Dickinson's case, regained consciousness even for a short time.—*Lancet*, March 8, 1890.

DUBOISINE.

As some uncertainty appears to exist as to the identity of the basic substance met with in commerce under the name "duboisine," it may prove useful just now to recapitulate the principal points in its history. In April, 1874, MR. GERRARD described at an evening meeting of the Pharmaceutical Society a mydriatic alkaloid that he had separated from the leaves of the Australian *Duboisia myoporoides*, which was provisionally named "duboisine" (*Pharm. Journ.* (8), viii., 787). Six years later Professor LADENBURG examined a sample of "duboisine sulphate," obtained from Merck, of Darmstadt, and came to the conclusion, based principally on the properties of the gold salt, that the alkaloid contained in that sample was in every way identical with hyoscyamine (*Berichte*, xiii., 257; *Pharm. Journ.* (3), x., 789). Subsequently, it having been asserted that duboisine differed from hyoscyamine in its physiological action, Professor Ladenburg was induced in 1887 again to take up the subject, and the result of his examination of a new sample, obtained from Merck as "duboisine," led him to the conclusion that the alkaloid he had to do with in this case was identical with hyoscine, a base that had been found in the mother-liquor obtained in the manufacture of hyoscyamine, and described shortly after the appearance of his previous paper (*Berichte*, xx., 1661; *Pharm. Journ.*, (3), xvii., 1049). A certain amount of mystification was here introduced into the subject by mistranslations of this paper (which appeared in the "Year-Book of Pharmacy" (1888, p. 62) and the *Journal of the Chemical Society* (Abstracts, 1887, p. 740)), in which Professor Ladenburg was incorrectly represented as stating that the alkaloid examined by him on the second occasion was identical with hyoscyamine. Professor Ladenburg, in fact, said expressly that in the second sample no hyoscyamine could be detected, nor any other alkaloid than hyoscine. He suggested, however, that probably the different result was due to some variation in the method of preparation, and that this is the true explanation is rendered probable by some information furnished by Messrs. Schering & Co., in response to inquiries on the subject, which has been kindly placed at our disposal by Messrs. Zimmerman. Messrs. Schering state that a short time ago they worked a quantity of Duboisia myoporoides leaves for "duboisine," and obtained a pure base in the form of a brownish thick liquid, the sulphate of which corresponded exactly and in every respect to the properties of sulphate of hyoscyamine. This they consider confirms the statement of Ladenburg, from which it would appear that they are not acquainted with the Professor's later paper. Moreover it may be remarked that pure hyoscyamine is described by him as a crystalline solid. Messrs. Schering add that hyoscine was obtained from the mother-liquid of the "duboisine sulphate," as well as from belladonna root. It seems probable, therefore, that, as Duboisia myoporoides, like belladonna and henbane, contains both hyoscyamine and hyoscine, the products obtained from it and sent out under the name "duboisine" may consist of the one or the other base, either exclusively or in preponderance, according to the method of preparation.—*Pharm. Journ. and Trans.*, March 1, 1890.

SOLUBLE SACCHARATE OF IRON.

ATHENSTAEDT's process is given as follows in the *Moniteur Scientifique*, November, 1889: A 1 to 100 solution of a ferric salt is precipitated by an equally strong solution of ammonia or a fixed alkali, taking care to operate at a temperature of about 10° C., and, in all cases, below 15° C. The precipitate must be washed rapidly in the dark and with distilled water, having a temperature between 10° and 15° C. The ferric hydrate is then mixed with powdered sugar in a quantity so regulated that the dry preparation will contain 3 parts of metallic iron to 100 parts of sugar. The mixture of hydrated iron and sugar is maintained at the boiling-point until the iron becomes dissolved in the syrup. The dry product is obtained by drying in vacuo at a

w temperature. This saccharate of iron ay be kept in a solution made by diluting e mixture, when cold, with water. These lutions are clear, and remain so indefinitely. —*Amer. Journ. of Pharmacy*, March, 1890.

ANISODUS LURIDUS.

Dr. Siebert reports some interesting results of an investigation of the *Anisodus luridus*, a Himalayan Solanaceous plant which seem to indicate that the degree of development of the plant may have an important relation to the quantity and nature of the alkaloids occurring in it (*Archiv der Pharmacie*, February 20, p. 145). From flowering plants he reports that he obtained, by fractional precipitation of an acidulated liquid with gold chloride, a "not inconsiderable quantity of hyoscyamine," but no atropine or hyoscine, while from plants collected when the seed had ripened only a very small quantity of atropine could be isolated under the same conditions and no hyoscyamine. The failure to detect hyoscine is thought to be possibly due to insufficiency of the material used.—*Pharm. Journ. and Trans.*, March 1, 1890.

THE MODE OF ACTION OF DIURETICS.

The conditions of the renal circulation are such that, were the mechanism pointed out to one who did not know the function of the kidneys, he might almost deduce the office of these organs. That the secretion of the watery part of the urine is mainly affected under high pressure in the Malpighian tufts, has been proved by numberless experiments since Bowman's time, and that the solids (urea, uric acid, etc.) are separated by the epithelia of the convoluted tubes, may also be said to be a dictum of science. It is admitted that there is still much that is obscure in the renal function; thus, no very satisfactory explanation has yet been given why albumen does not in the normal state filter through the capillaries in the glomerule along with the watery part of the urine. Küss and Wittisch, indeed, affirm that albumen does so filter, and that the epithelium of the convoluted tubes reabsorbs this albumen. It is needless to say, however, that the experimental demonstration of this view is wanting; it appears, in fact, to be negatived by experiments of Ribbert, who has in rabbits collected the urine as it is excreted by the Malpighian corpuscles, and found it to be watery and free from coagulable albumen.

As for the character of the products which filter through the renal parenchyma, much importance has been assigned to the "intelligent" action of the epithelia lining the glomeruli and Henle's loops; the main ingredients of the urine are believed to be selected by these cells, which, in the language of Vulpian, "separated from the blood the water and the divers soluble substances which enter into the composition of that fluid."

But there is another factor which has a powerful influence on the secretion of the urine,—namely, the blood-pressure in the renal capillaries. The experiments of Ludwig and his pupils have shown that the amount of urine secreted depends very closely upon the pressure of blood in the Malpighian bodies.* This pressure will depend on the proportion of liquid in circulation, on the force of the heart, and on the contractility of the vascular system. From very accurate experiments made by Runeberg, and confirmed by Lecorché and Talamon, it appears that in a given time more liquid filters into the glomerules and uriniferous tubules under high pressure than under low pressure.† This is what might have been expected from known physical principles, for the kidney is not only a secretive but also a dialyzing organ.

From what has been said, it will be seen that the most general division that we can make of diuretics is the twofold division into (1) substances which, when taken into the circulation, raise the blood-pressure in the kidneys; and (2) substances which stimulate the cortical epithelium to increase of function. This is essentially the classification given by Gubler and Professor Sée. The first division,—that is, those substances that increase vascular tension, includes what Gubler calls *tension diuretics*; the second division consists of substances which, in passing through the kidney, excite directly its tissue,—these he calls *excitant diuretics*. The latter is the same as Sée's second group,—that is, medicines which promote diuresis by favoring dialysis.‡ Lauder Brunton's classification is essentially the same.

Of all the agents by which the urinary flow is augmented, one of the best is undoubtedly

* Lauder Brunton.

† "Traité de l'Albuminurie et du Mal de Bright."

‡ Gubler, "Leçons de Thérapeutique," "Medicaments Diuretiques;" G. Sée, *Bull. de Thér.*, t. xciv., "An Attempt at a Physical Classification of Medicaments."

water, the free ingestion of which both raises the blood pressure in the kidneys and excites the epithelium to increased work. For it has been demonstrated that the epithelium of the convoluted tubes separates water as well as urea and saline principles from the blood. Gubler regards water as the best excitant diuretic; it certainly belongs to the first group as well, for it flushes the kidney and raises the vascular tension. Certain mineral-waters add to the natural diuretic effect of their water, the specific effect on the renal cells of their saline principles. Most of the diuretic plants act best when given in infusion or decoction, though many of them contain resins, essential oils, tannin, and salts, which, in the language of one school, stimulate the secreting cells, in the language of another school, promote dialysis by modifying the dialyzing membrane; it is still probable that these vegetable preparations when given in the form of ptisanes produce diuresis principally through their water.

Among the tension-promoters we have those that act generally, such as digitalis, caffeine, convallaria, which cause diuresis by their effect on the cardiac fibre, and such as act locally,—that is, on the vessels of the kidney itself. Among the latter are certain medicaments which are believed to dilate the different vessels of the kidneys. It is well-known that a certain amount of active vaso-dilatation in the renal cortex is essential to a free renal secretion, while any considerable vaso-constriction in the different vessels is attended with lessened urination, if not with positive anuria. Among the substances which dilate the afferent vessels, we have the nitrates, alcohol, and perhaps urea (Lauder Brunton).

Pressure in the glomerulus is also raised by vaso-constriction of the efferent vessels, the production of which, Lauder Brunton thinks, is one of the effects of the administration of broom, turpentine, juniper, copaiba, and cantharides. These latter, however, are classed by Gubler among the excitant diuretics; their real mode of action is still largely a matter of conjecture. Among the medicaments which doubtless cause diuresis by direct action on the secreting cells of the kidney, are calomel, acetate of potassium, liquor potassæ, and nitre, which latter is regarded by Gubler as the best and most certain of mineral diuretics.

It remains to notice (and this we do with little comment, there is still so much that is obscure in the action of medicines on the kidneys) the classification of diuretics given by Dujardin-Beaumetz in the last (sixt edition of his "Leçons de Clinique Thé peutique."

1. Medicaments which modify the blo pressure, either by energizing the cardiac s tole, or by acting on the muscular elem of the circulatory system, for example, the called heart tonics, and strychnine, ergot, e

2. Substances which produce diuresis both augmenting the pressure and modifyi liquids. Of this class, the typical example water.

3. Medicaments which act as diuretics promoting dialysis, for example, nitrate potassium, nitrate of sodium, acetate of tassium. These medicaments have a r disadvantage, in that they irritate both digestive tube and the renal parenchyma.

4. Medicaments which have the prope of modifying the dialyzing membrane. Th actively congest the kidney. The resins a balsams form this class. They increase t secretion of urine, but the urine is p foundly modified; hence they render grea service in diseases of the urinary passages lessening the effects of putridity of the ur than by any real diuretic action.

The above classification is another attem to refer the mechanism of the urinary sec tion to strictly physical principles, and mak no account of the functions of the epitheliu without which that secretion would be duced to the level of an exudation,—it wou not be urine.—*Boston Medical and Surgi Journal*, February 6, 1890.

SCOPOLIA ATROPOIDES.

A communication upon the constituents *Scopolia atropoides*, by DR. SIEBERT, a pu of Dr. E. Schmidt, of Marburg, appears the new number of the *Archiv der Pha macie*, February 20, p. 139. It will be r membered that this name was quoted Mr. Holmes in his recent paper before a synonyme for *Scopolia carniolica*, but the absence of information as to the pla examined by Dr. Siebert, beyond the stat ment that the materials were obtained fro the gardens at Karlsruhe and Marburg, cannot be said positively that it is identic with the subject of Professor Dunstan's rece investigation, though this seems very probabl Dr. Siebert reports that he obtained hyoscy mine from both the leaves and the root Atropine was also obtained in relatively sma quantity, but it is thought that it may possibl have been a product of alteration. Hyoscin

uld not, from want of material, be isolated a state of chemical purity, but in a foot-ote it is stated that pure hyoscine auro-hloride was subsequently obtained by Dr. iebert in working upon "Hungarian scopolia ot." In another foot-note Dr. Schmidt, re-rring to the previously reported occurrence f atropine, together with hyoscyamine and yoscine, in *Scopolia japonica* root, says that working upon a fresh quantity of roots nder different conditions he obtained only very small quantity of atropine in the last other-liquor from the gold salts, so that robably it was a product of alteration. The ther constituents observed by Dr. Siebert *Scopolia atropoides* were scopoletin, the uorescent body found also in the roots of elladonna, henbane, and *Scopolia japonica*, ogether with betaine and choline.—*Pharm. Journ. and Trans.*, March 1, 1890.

THE CAUSE OF PALLOR.

Dr. Oppenheimer has published some careful observations on the blood of one hundred and nine pale female subjects (servant girls) conducted by means of Zeiss and Thomas's hæmocytometer and Gowers's hæmoglobinometer. He considers the lowest number of corpuscles per cubic millimetre in a normal state of health as four million, and the lowest amount of hæmoglobin in health ninety per cent. He also agrees with Gräber's dictum: "Number of corpuscles and hæmoglobin both diminished = acute and chronic anæmia. Number of corpuscles diminished, hæmoglobin relatively increased = primary chlorosis or pernicious anæmia. Number normal, hæmoglobin diminished = chlorosis." In severe cases of chlorosis, with tendency to faintness, headache, heart symptoms, and œdema without albuminuria, the hæmoglobin varied from thirty to fifty per cent. In fifty-five of the cases the condition of the blood was normal. These patients were found to be suffering from phthisis, cardiac disease (compensated), gastric ulcer, and various affections of stomach, intestines, or genital organs. Phthisis of itself—that is to say, before hemorrhage or diarrhœa or profuse expectoration had come on—appeared to have no effect on the blood. An interesting result was obtained in connection with gastric ulcer. In simple ulcer the blood was normal, except when there had just been hæmatemesis, but in carcinoma of the stomach both the number of the corpuscles and the hæmoglobin were subnormal. Pale girls sometimes take iron for a long time without any visible improvement. Dr. Oppenheimer finds that such patients are not anæmic, but chlorotic from some uterine or other affection, so that when the blood is found to be normal it is advisable to make a vaginal examination. The pallor of patients with normal blood appears to be due to the insufficient filling of the cutaneous capillaries. From the observations of Dastre and Morat there would seem to be an antagonism between the blood-vessels of the skin and those of the abdomen; so that if one of these systems becomes dilated, the other, by an automatic reflex action, invariably becomes contracted. Because of the fact that irritation of the depressor nerve of the heart induces dilatation of the abdominal vessels and contraction of the cutaneous vessels, Dr. Oppenheimer believes that the pallor of phthisis, cardiac diseases, and kidney mischief is due to reflex action. In these affections the heart has extra work to do, and this affects, by means of the depressor nerve, the vaso-motor centre, causing a diminution of the cutaneous flow, and consequently a dilatation of the abdominal vessels. The pallor observed in most inflammatory affections of the hypogastric viscera may probably be explained also by the reflex action of the hyperæmic abdominal vessels upon the calibre of the cutaneous vessels.—*Lancet*, March 1, 1890.

GUARANA IN CHRONIC DIARRHŒA.

In the *American Journal of Pharmacy* for February, 1890, Mr. J. T. Shinn publishes a note from Dr. J. Frazer Boughter as to the use of guarana powders in cases of long-standing diarrhœa. Only one case is reported, that of a soldier, who for two years had been troubled with chronic diarrhœa, and at the time of writing had been in the hospital for two months, with eight or ten movements in twenty-four hours. All the vegetable and mineral astringents were tried, with only partial and temporary relief. It was then decided to give him the guarana powders, one powder being given twice daily for several days, and only one powder being given afterwards for several days. It is stated that at once, after the administration of the first powder, the number of passages from the bowels diminished rapidly, and by the time seven or eight powders were given, he had but one passage in thirty-six hours. Dr. Boughter attributes this rapid change for the better to the guarana, as he stopped all other medicine while administering it. The good effect which it seems to

have produced in this case, though a solitary instance, leads to the belief that it is worthy of more extensive trial by the medical profession.

THE INFECTION OF CATGUT LIGATURES.

At the meeting of the Society of German Naturalists and Physicians, recently held in Heidelberg, DR. C. BRUNNER reported a number of experiments which he had made as to the infection of catgut ligatures (*Deutsche Medicinische Wochenschrift*, March 6, 1890). He found that while sublimate catgut and catgut disinfected by dry heat remained perfectly sterile, catgut ligatures treated with carbolic or chromic acids and with the oil of Juniper, placed in cultures, developed numerous colonies of bacteria. He also found that oil of juniper was perfectly incapable of preventing the development of the micrococci of splenic fever obtained from the rabbit infected with this disease after thirty-six hours' action, while six hours' action of the sublimate of a one per thousand solution, two hours' action of dry heat of 140°, or a twelve days' contact with a 20 per cent. solution of carbolized oil solution, were able to entirely prevent further development of the germs.

ADULTERATION OF TEA IN CHINA.

For a number of years the Chinese have been exporting into Europe a tea-leaf which has a peculiar external appearance, to which the name of "gun-powder tea" has been given. This leaf, which does not possess the physiological properties of the true China tea, is sold as a distinct commercial species under the name of "Imperial Chinese tea," although sometimes it is mixed in varying proportions with true tea-leaves, which more or less approach it in its external characteristics. Specimens of this tea have been recently subjected to chemical analysis by MESSRS. RICHE and COLLIN (*Répertoire de Pharmacie*, February 10, 1890), who in comparing the result with Hyson tea have stated that the ash of both specimens is about the same.

As regards the presence of theine, the authors were unable to obtain any crystalline alkaloid in the so-called gun-powder tea, but only a greenish, viscid substance, and the authors hence concluded that those teas which do not contain theine cannot be the leaves of the *Thea Chinensis*. Further, it is claimed that this tea when rubbed up between the fingers leaves a yellowish-brown stain, and when the powdered tea-leaves are treated with dilute sulphuric acid they become discolored and assume a blue color on the addition of caustic potash.

These results, the authors claim, prove that the tea is contaminated with prussian blue, for a dense blue color is produced if they are added in the presence of an acid to a salt of iron. Further, the botanical characteristics of the leaves do not correspond with those of the *Thea Chinensis*, although the authors have been unable to determine from what plant they are obtained.

THE EFFECTS OF ANTIPYRIN IN WHOOPING-COUGH, CHOREA, AND ENURESIS.

Considerable evidence has been advanced as to the value of antipyrin in the treatment of whooping-cough and chorea. In his graduation thesis DR. JEAN BOUISSON (*Lyon Médical*, February 9, 1890) gave an account of a number of his own experiments. In whooping-cough his results were practically nil, but in chorea, on the other hand, his success was most remarkable. Of nineteen patients treated with antipyrin, eleven were completely cured, while six were greatly improved; and even in two extremely severe cases there was great improvement in the patients' condition. In nocturnal incontinence of urine, however, his results were most striking: eight patients suffering from this affliction were treated with antipyrin and all eight were completely cured, although a number of them had suffered from nocturnal incontinence for years and had proved rebellious to all treatment. After the cessation of treatment the eneuresis did not again appear. The amount given in twenty-four hours varied from thirty to sixty grains, according to the age of the children. The author advises its administration in some alkaline liquid, Vichy water for example, rendering it more readily taken by children. It may be sweetened with syrup.

MENTHOL IN THE VOMITING OF PREGNANCY.

Menthol has been recommended (*Répertoire de Pharmacie*, February 10, 1890) in the treatment of obstinate vomiting of pregnancy; one part of menthol should be dissolved in twenty parts of alcohol and thirty parts of simple syrup, a teaspoonful being given each hour. This prescription is claimed to be extremely successful in arresting nausea and vomiting.

—THE—

Therapeutic Gazette.

Whole Series, Vol. XIV. | DETROIT, MICH., PHILADELPHIA, PA., | May 15, 1890. | Third Series, Vol. VI. No. 5.

CONTENTS.

Original Communications.

PAGE

New Therapeutic Agencies. By Professor Dujardin-Beaumetz..... 289
The Action of Caffeine on the Circulation. By Edward T. Reichert, M.D. 294
Alkaloidal Strychnine in Effective and Continued Use Unsafe. By Henry M. Field, M.D..... 302
The Treatment of Boils and Carbuncles and other Suppurating Diseases by the Use of Calcium Sulphide. By John Aulde, M.D..... 305
An Apparatus for the Collection of Dust and Fungi for Microscopical and Biological Tests. By Samuel G. Dixon, M.D..... 308
Rupture of the Choroid in a Hæmatophilia. By J. A. Patterson, M.D..... 310
Contribution to the Therapeutics of Hay-Fever. By Alex. Rixa, M.D..... 311

Leading Articles.

The Treatment of Biliary Colic with Olive Oil..... 314
The Therapeutic Value of Sulphonal.... 315
The Action of Orexin..... 316
Mark Twain on the Therapeutics of By-Gone Times..... 316
A Word on the Treatment of Chronic Diseases..... 318
Is there any Truth in the Adage, "Naturam Morborum Ostundunt Curationis?"..... 318

Reports on Therapeutic Progress.

PAGE

The Anæsthetic Properties of the Fluorides of Ethyl and Methyl..... 313
Panbotano as a Substitute for Quinine.. 313
The Physiological Action of Antipyrin.. 319
Sodium Silicofluoride as an Antiseptic... 322
Crystalline Digitalin..... 323
Treatment of Endometritis by Curetting 323
The Treatment of Cystitis in the Male.. 324
Combination of Chloral and Antipyrin.. 326
The Treatment of Gonorrhœa by Salol 326
The Production of Acute Œdema of the Glottis from the Administration of Iodide of Potassium..... 327
Salicylate of Sodium as a Cholagogue... 328
Iodine as a Remedy for Vomiting..... 328
The Action of Caffeine..... 329
The Use of Fluorescein as a Means of Diagnosing Lesions of the Cornea..... 330
Massage of the Heart..... 330
Effects of a Very Large Dose of Acetanilide..... 331
The Use of Trichloracetic Acid in Affections of the Nose and Throat 332
The Use of Cocillana as an Expectorant 333
Tincture of Naregamia—A New Expectorant 334
The Transmission of Typhoid Fever by the Air..... 335
Massage of the Ear..... 335
Treatment of Acne..... 336
A Method for Arresting the Spasms of Whooping-Cough.. 337
Chloralimide..... 337
Intra-Muscular Injections of Mercury in the Treatment of Syphilis..... 337
Sub-Benzoate of Bismuth in the Treatment of Soft Chancre..... 338
The Excretion of Morphine in the Milk 338

PAGE

Reviews..... 339

Correspondence.

London Letter..... 342
Paris Letter..... 344
Berlin Letter..... 347

Notes and Queries.

The Tenth International Medical Congress..... 350
The Hypnotic Effect of Warm Bandages..... 353
Fatal Podophyllin-Poisoning..... 353
Drainage of the Peritoneum..... 353
The Value of Trichloracetic Acid as a Test for Albumen in the Urine..... 354
Western Pennsylvania Medical College 354
Operations on the Prostate Gland..... 354
The William F. Jenks Memorial Prize.. 355
The Dangers of Cannabis Indica..... 355
Behavior of the Pupils in Epileptics..... 355
Bromide of Gold in Epilepsy..... 356
Vomiting in the Later Months of Pregnancy 356
Hypodermic Injections of Chlorodyne in Diarrhœa..... 357
A Simple Treatment for Croup..... 357
Window-Pane Barometer..... 357
The Treatment of Addison's Disease.... 357
Bactericides..... 358
The Physiological Properties of the Kola Nut..... 359
The Treatment of Dropsy..... 359
Antimony in Inflammations..... 360

Original Communications.

*NEW THERAPEUTIC AGENCIES.**

LECTURE V.—ON THE TREATMENT OF DIARRHŒA AND CONSTIPATION.†

BY PROFESSOR DUJARDIN-BEAUMETZ,‡ PARIS, FRANCE.

GENTLEMEN:—I desire to devote this short lecture not to the complete study of the therapeutics of diarrhœa and constipation, but to the modifications in the treatment of both these affections which have been necessitated by our new acquisitions respecting the pathogeny of intestinal troubles.

In my first course, I dwelt at considerable length on intestinal antisepsis, and showed you that the digestive tube is a laboratory where are being incessantly elaborated septic products which must be expelled from the economy, or toxic phenomena will supervene forthwith. I shall not return to this topic; but these new notions have modified, or rather thrown light upon certain points heretofore obscure in the treatment of diarrhœa and constipation.

These two terms are not so far apart as one would suppose, for very often constipa-

* A second series of "New Medications," published in 1887.

† From advance sheets, revised by the author (translated by E. P. Hurd, M.D.). Lectures delivered in Cochin Hospital, Paris, France.

‡ Member of the Academy of Medicine, Physician to the Cochin Hospital, Paris, France.

tion leads to diarrhœa,—that is to say, the constipation ends finally in copious stools, and there is a reaction from scarcity of fæcal matters to rather profuse intestinal fluxes. If, moreover, constipation, by the prolonged sojourn of matters in the digestive tube, favors the penetration of toxines in the economy and a veritable stercoræmia, it is still by the same emunctory that elimination of all these toxic substances is effected after their absorption into the blood, for septic diarrhœa is a fact.

If you survey the symptomatic aggregate of toxic phenomena, whether determined by the presence of toxines generated in the digestive tube, or by the presence of those which have penetrated from the outside, you will see that they may all be referred to three forms, which are either chronic, subacute, or acute.

The first of these types, or the chronic form, is most often presented by constipation, or, it may be, by the alternation of diarrhœa and constipation, or by putridity of the intestinal contents. It is chiefly in gastric neurasthenia, in those that have dilated stomachs, that you will observe this form. Nervous symptoms, irritability of disposition, hypochondriasis, especially characterize this chronic form, and the bad humor of the constipated has become proverbial. Voltaire has given us a remarkable and perfectly physiological description of the influence of the stools on the disposition. Permit me to cite the passage: "Persons who have a fair amount of *embonpoint*, intestines well lubricated, the bile-ducts open and pouring out bile, peristaltic movements easy and regular, who rid themselves every morning of a good stool, such persons, who are by this fact favored by nature, are mild, affable, gracious, and sympathetic, and a 'no' from their mouths has more grace than a 'yes' from the mouth of one that is constipated."

The second, or subacute type, presents itself under two forms,—the gastro-intestinal and hepatic. The first constitutes what we once called "*embarras gastrique*," febrile or non-febrile. It is characterized by a furred state of the tongue, loss of appetite, and the existence of diarrhœa; it is generally accompanied by a more or less pronounced febrile state. These symptoms are the result of a real poisoning produced by the introduction of altered foods into the digestive tube, or, it may be, by the penetration of toxic substances by the inspired air. Prolonged sojourn in public halls or lect rooms, where a great number of persons congregated and ventilation is bad, expo for a considerable time to the air of diss ing-rooms, and even the very fact of breath the air of our large cities, are condition septic poisoning; and the toxines, on be eliminated by the surface of the diges tube, determine that particular state to wh has been given the name of *embarras trique*.

The fever which accompanies this gas embarrassment has the same origin, and recent experiments of Roussy entirely c firm this view, in showing that certain di tases in penetrating the blood become py togenous. You know, in fact, that Rou by injecting into the blood *invertin*, that di tase, discovered by Berthelot, which transfo saccharose into levulose and dextrose, termined violent attacks of fever in anima

If you remember, moreover, that the testinal juice possesses the property of verting cane-sugar, of transforming s charose into invert sugar, you will at once the two facts together, and you will have plausible physiological explanation of febrile phenomena which accompany gast embarrassment.

The other form is the hepatic form. A told you in a previous lecture, the liver pla a considerable part in regard to the penet tion of intestinal toxines into the econom it is a natural barrier which prevents th penetration in most cases; but it is easy understand that this barrier may be clear or forced, or that the excessive work entail upon the liver by an incessant and enormo destruction of toxines may bring about co gestion of that organ, with resulting "b iousness" and catarrhal icterus. In his r markable lectures on hepatic affection Chaufard has adopted these new theori of catarrhal icterus, and has shown the i fluence of toxines in the production of th morbid state.

Lastly, the third type is the acute. He the economy abruptly expels the toxic sub stances, which have entered it, under the for of diarrhœa and vomiting; this is ind gestion.

Such, briefly summed up, are the thre great types of intestinal poisoning. It is a mitted that we have not complete data o

* Roussy, "Experimental Researches on the P thogeny of Fever" (*Acad. de Méd.*, February 12 an March 12, 1889); see also *Bulletin de l'Acad. de M* November 12, 1889, No. 45, p. 468).

subject, and I am persuaded that an active study of the fæcal matters, the examination of the toxines which they contain, and the state of putridity which they present, will enable us in the future to indicate with more precision the numerous troubles due to gastro-intestinal putridity, and I call to this point the attention of all orginal investigators.

Therapeutic intervention is needed in all these cases, and at the head of medicinal agents we must place those that promote intestinal antisepsis. In a former lecture I considered this subject at some length. I told you that we could obtain intestinal antisepsis by laxatives, by lavages, gastric and intestinal, and by a special hygiene. We will pass over all these points in considering particularly the treatment of diarrhœa and constipation. There are, as I told you, inert powders which realize with considerable certainty this intestinal antisepsis, and at the head of these powders we must place the salts of bismuth, and particularly the salicylate. I was the first, several years ago, to experiment with salicylate of bismuth and apply it to the treatment of intestinal diseases. In the trials which I made with it at St. Antoine Hospital, and, in particular, in the children's wards, I proved it to be a remedy of great efficacy.

It was, in fact, about ten years ago that I first obtained a supply of this salt from M. Schlumberger, and experimented with it in my hospital. In 1882, Vulpian made trials of salicylate of bismuth in typhoid fever, and since the labors of Bouchard this bismuth salt has gradually taken the place of the trinitrate. Long ago the powerfully antiseptic properties of the latter in intestinal diseases were known. It is, in fact, a highly basic salt, and, moreover, it is absorbent, and its antiputrescent action is marked. But the salicylate is much superior. I should have said the salicylates, for there are several kinds of salicylate of bismuth, as Jaillet has shown; there is an acid salicylate and a basic salicylate.* Both contain free salicylic acid, the first forty per cent., the other twenty-three per cent. This free salicylic acid plays a considerable *rôle* in the antiseptic action of these salicylates. We find to-day in commerce a salicylate which responds very well to the needs of therapeutics, as Ragoucy has shown.†

You will associate the salicylate of bismuth with magnesia or bicarbonate of sodium, with naphthol, or charcoal, or salol, giving the medicine in the form of capsules or wafers after each meal:

1. Salicylate of bismuth,
   Magnesia,
   Sodium bicarb., aa ʒiiss. M.
   Divide in chart. No. xxx.

2. Salicylate of bismuth,
   Prepared chalk,
   Phosphate of lime, aa ʒiiss. M.
   Divide in chart. No. xxx.

3. Salicylate of bismuth,
   Naphthol β,
   Powdered charcoal, aa ʒiiss. M.
   Divide in chart. No. xxx.

Naphthol, whether naphthol α or naphthol β be used, is often badly tolerated by the stomach; it may even cause considerable irritation. In such cases I advise you to substitute salol for naphthol; it is an antiseptic, is very little toxic, and may be given in the same dose as the salicylate of bismuth.

℞ Salicylate of bismuth,
   Salol,
   Powdered charcoal, aa ʒiiss. M.

Sig.—Divide in chart. No. xxx., for administration in capsules or wafers.

By the side of these salts of bismuth and these antiseptic mixtures, I must speak of a plant which, if it possesses feeble antiseptic properties, is certainly among the most astringent. It is a plant obtained from Chili, to which Dr. Cervello first called my attention, and with which I was the first to experiment in Europe after its botanical species had been determined; I allude to the *Histerionica Baylahuen.* This plant is chiefly characterized by the yellowish resinous exudation which covers every part of it, and gives it when dry the appearance of a plant which had been dipped into resin and then dried.

An infusion is made with this plant by steeping 1 part in 150 parts of water. It is this infusion which is chiefly employed in Chili, and which we have used in the treatment of chronic diarrhœas, and we have been surprised with its action in certain abdominal fluxes which most resist our therapeutic agencies,—in the diarrhœa of the tuberculous, for instance. You will find in the theses which my pupil, Dr. Baillé, has devoted to this subject, a full account of the trials made with this new remedy in our hospital.‡

* Jaillet, "On the Salicylates of Bismuth" (*Bull. de Thér.*, 1883, t. cv. p. 113).

† Ragoucy, "On the Composition of the Salicylates of Bismuth" (*Bull. de Thér.*, 1883, t. cv. p. 328).

‡ Baillé, *Thèse de Paris*, 1889, and *Bull. de Thér.*, 1889, t. cxvi. p. 160.

This is, then, a plant which deserves a permanent place in our materia medica as one of the most powerful agents which we have for the treatment of chronic diarrhœa. It is worthy of mention that the resin, which constitutes the essential part of this plant, makes it well adapted, like the other balsamics, to the treatment of urinary and pulmonary affections. We may even utilize its properties as a dressing for wounds, employing the tincture for this purpose. Unfortunately, the *Hysterionica Baylahuen* remains a scientific curiosity, for, save the supply sent to me by Cervello, of Valparaiso, there has never been a shipment of this drug to our country.

The second group of means to employ for the obtention of intestinal antisepsis comprehends, as we have said, purgatives. The group of purgatives remains what it was when I published the third edition of my "New Medications." I there called attention to *Cascara sagrada*, the study of which my pupil Eymery had made in my service.*

Since this publication, the first made in France on cascara, this medicament has taken a permanent place in current therapeutics, and subsequent facts have only confirmed the researches which I had undertaken with the *Rhamnus purshiana*.

We have been less successful with another plant, which was sent me by Dr. Pedro Acouna, of Catamarca, and which bears in the country the name of *piligan*. Dr. Blondel established the botanical species of this plant, and found that it belonged to the Lycopodia. Adrian and Bardet discovered an alkaloid there which they called *piliganine*. The trials which we have made at the hospital have shown us that piligan contains, besides piliganine, a resin which is highly purgative, while the aqueous extract which contains the piliganine is emetic. But the toxicity of this piliganine is so great that I think it hardly safe to use it in ordinary practice as an emeto-cathartic.

The purgative waters are coming more and more into general use, and it must be admitted that they constitute one of the best agencies for the treatment of constipation and its evils.

To the French waters of Montmirail-Valqueiràs, to the Hungarian purgative waters so widely known, has recently been added a mineral water which seems to be much the most concentrated of all the purgative waters; it is a Spanish water, like R binat, and exclusively sulph sodic, but muc stronger than the Rubinat. I allude to th Villacabras spay, near Madrid, which co tains 91 per 1000 of sulphate of sodium, whi the Rubinat contains only 72 per 1000.

In certain cases there is an advantage substituting for the natural or artificial salin waters an association of laxative ingredient more or less complex, in the form of purg tive pills or powders. The formula which ordinarily use is the following. (The senn pods should, when possible, be used in pre erence to the leaves.)

℞ Senna-pods, pulverized and washed with alcohol,
Sublimed sulphur, aa grammes vi (gr. xc);
Pulv. fennel,
Pulv. anise, aa grammes iii (gr. xlv);
Pulv. cream of tartar, grammes ii (gr. xxx);
Pulv. licorice, grammes viii (ʒii);
Pulv. sugar, grammes xxv (ʒvi¼). M.

Sig.—One or two teaspoonfuls, stirred in a lit water.

Such are the several indications which desired to present in reference to purgative and must refer you for a more special consi eration of this subject to my "Diseases of th Stomach and Intestines;" and I come now the third order of means to be employed diarrhœa as in constipation; I refer to lavag of the stomach and intestine.

In cases of constipation I need not te you the advantages to be obtained from re tal irrigations; simple lavements or purg tive lavements have a *rôle* of considerabl importance. But I must especially insist o the good effects to be derived from lavage the stomach when there exists an intestin obstruction. We have here an excelle method, which, if it does not act on th strangulation and its cause, protects th economy from the dangers of poisoning b the toxines accumulated in the digestiv tube, in enabling us to remove such a come from the stomach or have flowed fro the intestine into the stomach.

But it is especially in the putrid and in fectious diarrhœas that antiseptic lavages o the intestine may give us good results. It is well to make use of antiseptic solution of boric acid (ten per thousand) or of naph thol (one per thousand), and throw thes solutions as high up as possible. You wil accomplish this by abandoning the rectal ir rigator, and by using the ordinary tubes fo lavage of the stomach, and especially th Debove tube, whose pliant but sufficientl rigid extremity permits of easy introducti

* Eymery, *Thèse de Paris*, 1884.

into the rectum. Then, by filling the funnel and raising it to a suitable height, the liquid is made to penetrate the intestine as far up as you desire, and by these antiseptic means you will avoid all the accidents which arise from putrid diarrhœa.

There are even certain forms of cancer of the rectum, extremely slow in their progress, like those carcinomata of the uterus or breast which last ten to fifteen years without producing cachexia; these cancers, which do not completely obliterate the lumen of the intestines, may be treated by purgatives, by lavages of the intestine, and by a vegetarian regimen, and under this form the antiseptic medication is quite applicable, and even enables the patient to grow fat and to live with relative comfort, though a subject of incurable lesions. I have had a number of examples of this sort under my observation.

Lastly, we come to the matter of dietary regimen. Here we have to study its relation, first, to diarrhœa, and, secondly, to constipation. In the treatment of diarrhœa, milk, I hardly need tell you, is one of the most precious of aliments, especially in chronic diarrhœa; in fact, on milk diet we rely. At the same time, there are some persons in whom milk provokes diarrhœa, or in whom milk alone does not suffice to cure the diarrhœa. In these cases, without abandoning the milk, it is necessary to add lime-water.

By the side of milk we must place the vegetarian diet, and I am in the habit, in treating the chronic diarrhœas due especially to residence in warm climates, to follow this method: I begin by putting the patient on an exclusively milk diet, with or without lime-water; then, at the end of a certain time, I give the yelks of eggs in milk or chicken-broth, or raw eggs right from the shell, or even American cream. You know that by this word we designate the following preparation: The yelks of two eggs beaten with fine sugar, and a few drops of rum or Spanish or Sicilian wine; the eggs are eaten in this state without any water and without being cooked.

Then I allow amylaceous substances, which I prescribe under the form of pea soups, stews of potatoes, lentils, beans, gruels, and puddings of wheat flour, rice, barley, Indian meal, oatmeal, rice under all its forms, strained panada, racahout,* lactated farina, and even the sweet revalescière,† which, notwithstanding all the advertising bluster associated with it, constitutes a pretty good alimentary mixture. Lastly, you can order the various hard biscuits (some patients do very well for a time on pilot-bread), macaroni, and other of the alimentary pastes of commerce.

If all these substances are well supported, I then allow other kinds of food, such as green vegetables thoroughly cooked, stewed carrots, turnips, beets, green peas, Julienne soup; and it is only when these articles of diet have been found to agree that I permit meats, and I always begin with those that are thoroughly cooked, such as stewed chicken, beef *à la mode*, calf's foot jelly, fowls well seasoned, and it is not till the patient is, so to speak, well, that I let him have underdone meats.

This is an order which is rarely followed, for practitioners are very apt to begin with meat, or to put their patients on raw meat, after first confining them for a day or two to milk diet. This method, excellent in the case of children, is less applicable to adults. Moreover, it is necessary to understand what is meant by this word diarrhœa, and it seems to me important to distinguish diarrhœas having their origin in the stomach and small intestine from those which are due to a morbid state of the large intestine. The first only are amenable to a dietetic treatment; on the second the influence of diet is very much less marked, and here we must rely on lavages and other local means.

I have just alluded to the diarrhœa of children. The subject of infantile diarrhœa constitutes a large chapter, which I cannot touch upon here. Nevertheless, I desire to call your attention to the happy effect of lactic acid in the green diarrhœa of infants, which, as the labors of Damaschino, of Hayem, and of Lesage have shown us, is a microbic diarrhœa. You will administer the lactic acid in a two per cent. solution, of which you will give a dessertspoonful every two hours:

℞ Acid lactic, grammes iii (gr. xlv);
Orange-flower water, grammes xxx (℥i);
Linden-water, grammes cxx (℥iv). M.

It remains for me, before finishing this lecture, to speak of the diet most suitable for the constipated. In my "Diseases of the Stomach and Intestines" I have devoted an

* Contains salep, cocoa, sweet acorns, potato starch, rice flour, sugar, and vanilla.

† A mixture of lentil flour, Indian meal, pea flour barley flour, common salt.—Tr.

entire chapter to this subject, to which I would refer those who wish to study the dietetic principles applicable to constipation. At the same time I ought to allude here to the new acquisitions which have been made to the alimentary regimen of the constipated.

To the bran bread, and to the rye and Graham bread heretofore employed, should be added soja bread. When I was speaking of this Japanese bean, in my first lecture, I told you of the purgative oil which it contains, and which is got rid of to a greater or less extent in bread-making. But this separation is never sufficiently complete to deprive this soja bread altogether of its purgative action.

Lecerf's bread, taken in too great quantity, is really purgative, and that of Bourdin, of Rheims, which contains both gluten and soja not freed from its oil, is still more laxative, and if it were not for the rather rank taste of these sorts of bread, we should have here, it must be confessed, one of the most active agents for the treatment of habitual constipation.

A vegetable diet is not without influence on the constipated. While a diet more or less exclusive of animal food gives hard and scanty fæces, it is altogether different with a vegetable diet, which furnishes soft and pasty fæces, like those of the herbivora.

It is, then, necessary, in the dietary of the constipated, always to give predominance to the vegetarian regimen, which, as you see, plays a considerable *rôle* in the treatment of diarrhœa and constipation, as it is applicable to both of these states of the digestive tube.

This alimentary regimen, in fact, promotes abundance of stools in cases of constipation, and it has a favorable influence in cases of diarrhœa in calming the irritation and inflammation of the digestive tube, which characterize chronic intestinal fluxes; and I shall endeavor to show you in my next lecture that this influence is equally great in another affection,—renal insufficiency.

THE ACTION OF CAFFEINE ON THE CIRCULATION.

By Edward T. Reichert, M.D.*

COFFEE and its two conceded active principles—caffeine and the oil of coffee—are generally believed to act as stimulants to the circulation, increasing the force and frequency of the pulse and the amount of work performed by the heart, yet the evidence upon which this is founded is far from convincing, there being but few cases of poisoning on record, the actions of therapeutic doses having been but little studied, and the results of experiments on the lower animals insufficient and conflicting.

Curshmann (*Deutsche Klinik*, 1873, s. 37) records that in the case of a young woman who attempted to commit abortion by drinking a decoction made from 250 grammes of coffee, the pulse-rate was increased to 1[illegible] per minute, the beats were augmented in strength even to a degree of violence, and the arterial tension increased. In another instance ("Memorabilien," Von F. Betz, Heidelberg, 1877, s. 494), a woman, 30 years of age, after taking two doses of caffeine of .3 gramme (4 grains) each, there ensued palpitation, decided præcordial distress, frequent pulse, and abdominal pulsation. Frerichs (Wagner's 'Handwörterbuch d. Physiologie' Bd. iii. s. 721) found, after a dose of 1 grammes of caffeine, that the pulse in fifteen minutes was full and hard, and the number increased from 70 to 80 per minute. Similar effects were observed by the students of Lehmann (*Physiologisches Chemie*, i. s. 151) after taking from .3 to .6 gramme. In a case of poisoning in an adult, who took a drachm of the citrate, Routh (*London Lancet*, 1883, i. p. 680) noticed giddiness and faintness, followed by collapse and great cardiac prostration. Caron (quoted by Leven) found that after a dose of .5 gramme the pulse was diminished from 80 to 50 beats per minute. Marvaud ("Les Aliments d'Épargne," Paris, 1874, p. 308) states that sphygmographic curves, obtained after giving a distillate from coffee indicate increased tension of the vessel walls and Méplain (*ibid.*) asserts that the pulse is increased and the vascular tension diminished. These records certainly indicate that coffee and its active principles notably increase the pulse-rate, although occasionally, as in Caron's case, diminish it, but there is no clear evidence of an increase in the amount of work performed by the heart.

Experimental studies on the lower animals furnish results which are not as uniform, although the differences are to some extent due to the methods and dose employed. Voit ("Untersuchungen," München, 1860) states that the pulsations of the frog's heart are first increased, then followed by a gradual and progressive slowing, attended with irregularity, and finally ceasing. Stuhlmann and Falck

* Professor of Physiology, University of Pennsylvania.

(*Archiv f. Path. Anat.*, Bd. xi. s. 324), Johannsen ("Inaug. Dissert.," Dorpat, 1869), and Aubert and Hasse (*Pflüger's Archiv f. Physiologie*, Bd. v. s. 589) obtained similar results, although they are far from being uniform even in the records of the different individuals. In experiments in connection with the work performed by the frog's heart, Maki ("Inaug. Dissert.," Strasburg, 1884) found, with the aid of a Williams's apparatus, that the pulse was variously affected, and that in most of his experiments the blood-pressure was decreased and in a few increased, thus indicating that generally less work was accomplished. With the heart of the terrapin, Beyer (*Amer. Jour. Med. Sciences*, 1885, ii. p. 71) obtained varying results, depending upon the size of the dose. Small doses increased the force of the heart's contractions and arterial pressure, while large doses diminished both. Hare and Marshall (*Philada. Medical News*, 1888, p. 337), in experiments with the oil of coffee, found that minute amounts increase the pulsations in the cut-out heart, and that large doses cause them to become slower and weaker, and finally arrest the heart in diastole.

On the circulation in mammals but little valuable work has been done. Magendie was the first to state that when an infusion of coffee was injected into the jugular vein of a dog the arterial pressure was increased. Leven (*Archiv. de Physiologie Norm. et Path.*, 1868, p. 183) made two experiments on normal animals,—one on a cat and the other on a dog. In the first, .05 gramme was hypodermically injected. Before the injection the arterial pressure varied between 12.5 and 13.5 [centimetres]. Twenty minutes after the injection the pressure was elevated to 15. In the dog a similar dose was given. Before the injection the pressure varied between 9.5 and 10.5, and twenty minutes after was 16. In two other experiments, in which both pneumogastric nerves were cut, in a cat the pressure rose from 12 to 16 in twenty minutes after the injection, while in a dog the pressure rose from 11 to 16 in eighteen minutes, and the heart-beats were increased from 184 to 204. Aubert and Hasse (*loc. cit.*), in experiments on rabbits and dogs, found, as a characteristic effect of the intravenous injection of a one or two per cent. solution of caffeine, an increase in the pulse-rate, with lessened height of the curves, and a diminution of blood-pressure. The results on arterial pressure were not by any means uniform, although the injections were usually immediately followed by a diminution in pressure, which rapidly returned towards the normal, or even above it. Accompanying the diminution of pressure, the pulse-curves were generally smaller and the heart-beats more frequent. Their experiments are deprived of much value, however, because in all of them the animals were either curarized and kept alive by artificial respiration, or else were under the influence of morphine, or chloral, or both, and in one experiment all three were used. Maki (*loc. cit.*) also made experiments in which the animals were under the influence of atropine or chloral. He found that large doses of caffeine were always followed by a diminution in blood-pressure. Binz (*Archiv f. Exp. Path. u. Phar.*, Bd. ix. s. 38), in two experiments on small dogs, which were rendered stupid with alcohol, in one of which the pneumogastric nerves were cut, found in both that the hypodermic injection of caffeine was followed by a rise in arterial pressure and an increase in the pulse. With a distillate from coffee, made up largely of the oil, he records that in a dog the pulse was increased and pressure diminished. Hare and Marshall (*loc. cit.*) state that the pure oil of coffee, when injected into the jugular vein of a dog, causes an increase in the pulse-rate, a lowering of arterial pressure, and an arrest of the heart in diastole.

The drift of the above records indicates that the characteristic actions of coffee, or of its active principles, are to cause an acceleration of the pulse and a diminution in blood-pressure, but it is evident that we are not justified in forming any final conclusions. Moreover, it is by no means clear how the influences of these substances are exerted. In the present experimental inquiry an endeavor has been made to obtain some decisive information on these points. Healthy dogs were used, and a warm solution of caffeine*—of from two and a half, five, or ten per cent. strength—was injected into the external jugular vein, excepting in the last series of experiments, when it was given hypodermically. The carotid artery was always connected with a mercurial manometer, and graphic records made of the pulse and pressure. The time occupied in giving an intravenous injection was from ten to fifteen seconds, the time marked on the records denoting the end of the injection. The pulse-rate was counted for ten seconds, and the number per minute estimated from

* The caffeine used is the article of commerce, and undoubtedly prepared from tea-leaves, and is consequently theine, as is all the so-called caffeine.

this. The blood-pressure was measured in millimetres.

The first series of experiments embraces six on normal animals, the records of which are here condensed in tabular form:

FIRST SERIES.—*Normal Animals.*

Experiment 1.—Dog; weight, 5.328 kilos.

Time. min. sec.	Pulse per minute.	Mean pressure. m.m.	Remarks.
.00	126	140	
.10	...	...	Injected 1 c.c., 2½ per cent. solution.
.40	114	140	
1.40	114	148	
3.40	102	142	
5.40	112	...	
.50	...	...	Injected 2 c.c.
6.00	117	106	
7.00	90	138	
8.00	91	132	
12.00	102	142	
14.00	102	138	
.20	...	...	Injected 5 c.c.
.30	282	92	
.35	...	...	Sudden heart-failure.

Experiment 2.—Dog; weight, 5.442 kilos.

Time. min. sec.	Pulse per minute.	Mean pressure. m.m.	Remarks.
.00	174	162	
.30	...	...	Injected 3 c.c., 2½ per cent. solution. Pulse quickened, but struggles interfere with the tracing.
.50	...	134	
2.00	198	161	
4.20	190	162	
.22	...	...	Injected 3 c.c. Pulse instantly increased.
5.30	224	149	
7.30	184	161	
9.30	162	162	
11.00	159	160	
13.00	162	154	
.30	...	...	Injected 3 c.c. Pulse becomes very rapid and pressure falls.

Experiment 3.—Dog; weight, 5.555 kilos.

Time. min. sec.	Pulse per minute.	Mean pressure. m.m.	Remarks.
.00	114	184	
.15	...	...	Injected 2 c.c., 5 per cent. solution.
.30	312	124	
1.30	258	174	
3.30	168	186	
6.00	132	168	
9.00	144	176	
.05	...	...	Injected 1 c.c.
.15	228	136	
11.00	150	160	
15.00	135	160	
22.00	135	142	
24.00	...	...	Injected 2 c.c.
.30	426	126	
25.15	...	...	Sudden heart-failure following a slowing of the rapid pulse.

Experiment 4.—Dog; weight, 6.575 kilos.

Time. min. sec.	Pulse per minute.	Mean pressure. m.m.	Remarks.
.00	102	160	
.25	...	...	Injected 7 c.c., 5 per cent. solution.
1.00	312	92	
.20	276	170	
3.20	132	170	
7.20	102	148	
14.00	93	138	
16.00	88	144	
.15	...	...	Injected 7 c.c.
.35	294	90	
18.00	318	147	
22.00	258	162	
24.30	264	158	
.40	...	...	Sudden heart-failure.

Experiment 5.—Dog; weight, 15.419 kilos.

Time. min. sec.	Pulse per minute.	Mean pressure. m.m.	Remarks.
.00	156	156	
.20	...	...	Injected 3 c.c., 5 per cent. solution.
.40	180	130	
1.20	252	161	
3.20	192	168	
5.20	168	160	
7.00	168	160	
.12	...	...	Injected 3 c.c.
.20	198	120	
8.20	174	168	
10.20	156	168	
11.50	126	160	Killed.

Experiment 6.—Dog; weight, 5.5 kilos.

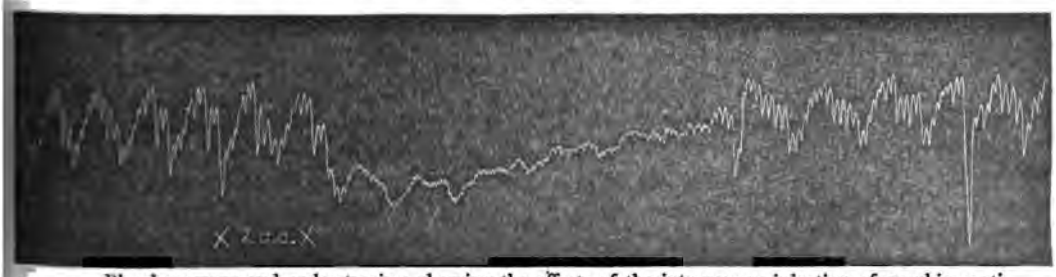
Time. min. sec.	Pulse per minute.	Mean pressure. m.m.	Remarks.
.00	165	150	
.15	...	...	Injected 1 c.c., 10 per cent. solution, causing struggles and an irregular tracing.
2.00	150	160	
3.00	126	164	
.10	...	...	Injected 3 c.c.
.35	216	104	
4.30	...	122	
5.30	...	148	
6.00	...	152	
.40	...	...	Dead. The pulse remained very rapid since 3.35, but was not countable, owing to muscular movements in the animal

In Experiment 1 the first injection of 1 c.c. of a two and a half per cent. solution was followed by a distinct diminution in the pulse-rate, attended with an increase in the height of the curves, and a slight increase in blood-pressure. A second injection of 2 c.c. caused a further decline in the pulse-rate, with also a fall of pressure. A rise of both then occurred, but at the end of the fourteenth minute the pulse was 24 beats below normal and the pressure about its normal standard. The injection then of 5 c.c. caused an enormous increase in the pulse, nearly trebling it, and which was accompanied by a decided fall of pressure, and followed in fifteen seconds after the conclusion of the injection by sudden heart-failure. In Experiment 2 the injection of 3 c.c. of the same strength of solution caused a quickening of the heart-beats and a temporary fall of pressure. The injection of a second and similar dose was followed by a further increase in the pulse and another decline of pressure. The pulse-rate then gradually diminished, falling below the normal at the ninth minute, while the blood-pressure was normal. At the thirteenth minute both pulse and pressure were distinctly subnormal. The injection then of 3 c.c. caused the heart-beats to become exceedingly rapid with low curves, the pressure rapidly fell, and death resulted from heart-failure. In Experiments 3, 4, and 5 a five per cent. solution was used. The results of the observations are quite uniform and characteristic, and exhibit the much more powerful influence of larger doses. In each, immediately after the first injection, an enormous increase in the pulse occurred, the curves were small, and the blood-pressure decidedly lowered. The heart-beats then became fewer, and the pressure recovered, going slightly above normal. A second injection again increased the pulse and diminished pressure. In Experiment 6 the injection of 1 c.c. of a ten per cent. solution was followed by struggles, which caused such an irregular tracing that no fair estimate could immediately be made of the pulse and pressure, but in the course of a couple of minutes the pulse-rate was found to be diminished and the pressure to be increased. The injection at the third minute of 3 c.c. induced a marked increase in the pulse-rate, with a rapid and decided diminution in pressure. After 3.35, muscular disturbances in the animal were so marked that no estimate of the pulse could be made. The heart's action was, however, very rapid. At 6.40, the heart-beats became suddenly slowed and cardiac failure ensued.

The results of these experiments show that the heart may be slowed or quickened in its action, that generally the pulse-rate is notably increased with low pulse-curves, and that the frequent pulse is accompanied by a diminution of blood-pressure. If the dose is sufficient, blood-pressure is primarily diminished; this is followed by a reaction, so that a point is reached which is slightly above normal. The immediate effects of larger doses are notably more intense, the repetition of small doses, or the injection of a single large dose, causing a remarkable increase in the heart-beats and a rapid, well-marked fall of pressure. It will also be observed that in several of the experiments a sudden heart-failure occurred.

We have, therefore, to determine the cause of the slowing or quickening of the pulse, of the immediate fall of pressure, of the increase of pressure, and, finally, the significance of the sudden heart-failure.

Alterations in the pulse-rate are to be attributed to an action exerted through the cardio-inhibitory apparatus, the accelerator apparatus, or a direct action on the heart-muscle or its contained ganglia. A depression of any part of the former, other things being equal, would give rise to an increase in the number of heart-beats with lower curves while a stimulation to the opposite effects.



Blood-pressure and pulse-tracing showing the effects of the intravenous injection of 2 cubic centimetres of a five per cent. solution of caffeine. Larger doses cause a greater diminution of pressure, which continues for a longer time.

In order to determine whether any influences are exerted through this portion of the nervous mechanism, a second series of experiments was made, in which the cardio-inhibitory nerves were cut, thus severing the connection between the cardio-inhibitory centres in the medulla oblongata and the heart. It is obvious that, should the quickening of the heart be due to depression or paralysis of these centres, or the slowing of the heart to a stimulation, the same effects would not be observed in this series. The enormous increase in the pulse-rate which was observed in the first series is far in excess of what could alone be produced by complete paralysis of the entire cardio-inhibitory apparatus, but there are also running with the cardio-inhibitory fibres a few which carry accelerator impulses, and which may at the same time be in a condition of increased activity. As animals breathe with great difficulty after section of the pneumogastric nerves, in which the cardio-inhibitory fibres run, a canula was in each instance inserted in the trachea.

The second series comprises four experiments, a five per cent. solution being used in each. Only two of the experiments are here given, the other two are confirmatory.

SECOND SERIES.—*The Pneumogastric Nerves cut.*

Experiment 7.—Dog; weight, 4.875 kilos.

Time. min. sec.	Pulse per minute.	Mean pressure. m.m.	Remarks.
.00	210	166	
.10	...	124	Injected 1 c.c., 5 per cent. solution.
.20	198	140	
1.00	228	158	
3.00	228	160	
5.00	228	158	
.10	...	...	Injected 2 c.c.
.20	276	88	
8.00	240	186	Struggles and general muscular disturbance cause the rise of pressure.
13.00	228	137	
.20	...	...	Injected 1 c.c.
.40	252	94	
16.00	228	129	
18.00	216	128	
.10	...	...	Injected 1 c.c.
.30	234	79	
22.00	228	90	
28.00	246	84	
35.00	276	60	Pressure gradually fell and heart failed. Death in 39 minutes.

Experiment 8.—Dog; weight, 25.179 kilo

Time. min. sec.	Pulse per minute.	Mean pressure. m.m.	Remarks.
.00	159	170	
.15	...	...	Injected 2 c.c., 5 p cent. solution.
.30	162	132	
1.30	166	164	
4.30	159	146	
10.30	156	138	
12.30	151	137	
.40	...	...	Injected 2 c.c.
.50	168	118	
15.00	150	138	
19.00	...	...	Injected 2 c.c., followe by struggles.
20.00	186	144	
25.00	156	132	
28.00	...	...	Injected 2 c.c., followe by struggles and othe muscular disturbanc which cause an in crease in pressure.
28.30	204	156	
30.30	...	...	Injected 5 c.c., causin in 40 seconds sudde cardiac arrest.

It will be observed from these records that while the effects on the pulse after section o the cardio-inhibitory fibres are the same qual itatively as in normal animals, the increase i by far from being as great. In Experiment 7 a slight momentary decrease followed the firs injection; the pulse then went above normal and remained in excess throughout the ex periment, each injection causing a well-de fined but temporary exacerbation. In Ex periment 8 but little change was observed, save at the twentieth minute after the third injection, and at the twenty-eighth minute following the fourth injection. In this ex periment the heart-beats for some time showed a distinct tendency to remain subnormal, but, as in normal experiments, a sufficient quantity of caffeine caused an increase. The other two experiments are nearly the counterparts of these.

These results show conclusively that, while caffeine still increases the heart-beats after section of the pneumogastric nerves, it is not as powerful in this action as before. Since these nerves contain also accelerator fibres, it may be that the less marked results are due, not to a depression of the cardio-inhibitory centres, but to the interference of the passage of accelerator impulses for the accelerator centres. Accelerator fibres run to the heart in two paths, a few of these only going through the pneumogastric nerves, the others taking course through the cervical portion of th

spinal cord. To determine what influence may be exerted by these accelerator centres, a third series of experiments was performed, in which both the pneumogastric nerves and the spinal cord in the upper cervical region were cut, thus isolating the heart from any direct central nervous influence.

The third series embraces four experiments, which are reciprocally confirmatory. The records of two of the experiments are here given. The operations were performed about a half-hour before the observations were begun, and the animals were kept alive by artificial respiration.

THIRD SERIES.—*The Pneumogastric Nerves and Spinal Cord cut in the Upper Cervical Region.*

Experiment 9.—Dog; weight, 3.413 kilos.

Time. min. sec.	Pulse per minute.	Mean pressure. m.m.	Remarks.
.00	234	83	
.10	...	...	Injected 1 c.c., 5 per cent. solution.
.40	246	51	
2.00	276	80	
4.00	264	85	
5.00	258	83	
.10	...	...	Injected 1 c.c.
.30	...	62	
6.30	270	71	
12.00	264	81	
.10	...	...	Injected 1 c.c.
.30	294	71	
15.00	282	75	
22.00	276	51	
36.00	270	34	Killed.

Experiment 10.—Dog; weight, 12 kilos.

Time. min. sec.	Pulse per minute.	Mean pressure. m.m.	Remarks.
.00	141	72	
.10	...	...	Injected 2 c.c., 5 per cent. solution.
.30	147	52	
1.30	...	64	
.40	...	...	Injected 5 c.c.
2.00	177	58	
4.00	159	60	
.10	...	...	Injected 5 c.c.
.30	155	60	
5.00	180	76	
6.00	180	74	
.10	...	...	Injected 5 c.c.
.30	195	62	
8.30	198	64	
9.00	...	...	Injected 5 c.c.
.30	218	54	
11.30	...	...	Killed.

In this series no essential differences are observed from the records of the preceding one, hence it is evident that caffeine does not act upon the accelerator centres. Since in this series the heart is isolated from its extrinsic nervous mechanism, it is evident that any changes which ensue in its pulsations would be due to a direct action on this organ. The beats are still increased in frequency, but yet not to so marked an extent as when the cardio-inhibitory apparatus is intact. Accordingly it is clear that the acceleration of the pulse is due to a depression of the cardio-inhibitory centres in the medulla oblongata and to a direct action on the heart.

The acceleration of the heart-beats, which is dependent upon direct cardiac action, may be due to an action on the heart ganglia or the heart-muscle. The increase is due largely or wholly to a depression of the cardio-inhibitory fibres or ganglion, for I have found during the progress of the poisoning that this portion of the inhibitory apparatus becomes less and less excitable to electrical stimulus, and that upon the approach of death no inhibition of the heart can, as a rule, be produced even by strong currents. The intensity, however, with which this drug acts upon the cardio-inhibitory apparatus varies considerably. In some animals it is greatly depressed from the first, in others but little affected, and in some instances will respond as long as the heart pulsates, although greatly enfeebled. It therefore seems evident that the increased frequency of the heart is due to a depression of the cardio-inhibitory centres in the medulla oblongata and in the heart.

It is a matter of great therapeutical importance to determine what significance is to be attached to the quickened heart-beats,—whether this change means a stimulant or depressant action. It will be observed from the statements recorded in the early part of this paper, that the frequent pulse has been looked upon as indicating a stimulating effect, and, indeed, the drug is sometimes classed as a cardiac stimulant. An increase in the pulse-rate, however, is far from possessing by itself any positive proof in this respect, since a depression of the heart may be manifest in either increased or diminished action, the work which the organ accomplishes alone determining whether acceleration means stimulation or the opposite. If we compare in the above records the pulse-rate and blood-pressure, it will be found that when the heart-beats are the most frequent the pressure is lowest; hence the increased action of

the heart is concomitant with subnormal pressure. This diminution of pressure cannot be due to any action exerted through the cardio-inhibitory nerves, since it is not accompanied by a slowing of the heart, and as it is observed after section of these nerves. It is also clear that the vaso-motor centres in the medulla oblongata are not accountable, because, as is shown in the third series, the same changes occur after their destruction. Associating, therefore, the quickened beats and diminished pressure, as in the third series, where the heart is isolated from its extrinsic mechanism, it is evident that caffeine acts as a direct depressant to the heart, increasing the number of pulsations but diminishing their efficiency, and thus lessening the actual amount of work performed. We are not without further proof that the heart is weakened, as is evident in the cases reported by Betz and Routh, and as is substantiated by the results of autopsies on dogs killed with caffeine, in every case this organ being found arrested in diastole. The work of Hare and Marshall with the oil of coffee shows that this substance causes the same result.

The slowing of the pulse is, doubtless, dependent upon two factors,—a primary stimulation of the cardio-inhibitory apparatus and a direct depressant action on the heart. When a diminution of the heart-beats follows a very small dose, and is antecedent to the decided increase observed when the animal is thoroughly under the influence of the drug, the change is likely due to a primary stimulation, by which the heart is slightly inhibited. In such a case, the fewer beats would be accompanied by higher curves and no decided change in the amount of work performed, thus showing that the efficiency of the heart's action was not injured. In Experiment 1 is a good illustration of this probable action. Up to the time of the last injection (14.20) the pulse-rate was below normal. Blood-pressure was not notably affected until this time, excepting after the second injection, immediately after which a notable transient fall occurred, accompanied by a trifling increase in the pulse. The heart-beats were less efficient, as was shown in the lessened height of the curves, indicating that the muscular power was diminished and that the work accomplished was lessened. The heart-beats then became slower, and with this change ensued more effective action and increased work. The last injection, however, was sufficient to bring about an immediate depression of the cardio-inhibitory apparatus, thus enormously increasing the number of pulsations, and in fifteen seconds after the dose the heart suddenly ceased its action, completely paralyzed. A slowing of the heart-beats is, however, not commonly observed until immediately before death, when it gradually diminishes in number, and is accompanied by a fall of blood-pressure, the two progressing *pari passu*, the pressure finally reaching zero, and the heart being arrested in diastole. Such diminutions in the pulse are observed in the isolated heart.

It is very evident from this that the actions of caffeine on the pulse-rate are of much complexity, small doses tending to diminish the frequency by a stimulation of the inhibitory apparatus, and large doses to cause an increase by a depression or paralysis of the inhibitory apparatus, and to cause a diminution by direct depression of the heart. Accordingly, it is obvious that we have at times opposing factors in action; hence, whether an increase or a diminution will prevail, will depend upon the relative intensities of the conflicting forces. The fact that the direct action of the drug in toxic amounts upon the inhibitory ganglion in the heart tends to cause an increase, and that the direct action on the muscle tends to diminish the beats, and that one or the other may be the more intense, affords a perfect explanation of the conflicting results obtained by some of the investigators alluded to in their experiments with the isolated heart of the batrachian.

In certain instances it will be observed that the arterial pressure goes slightly above normal. This change is rarely associated with corresponding alterations in the heart's action, and while it may at times also be due to struggles, it occurs entirely independently, and is seen in animals rendered motionless with curare. This indicates that the increase is due to an action on the vaso-motor system. It is well known that caffeine acts as an excitant to voluntary muscular fibres, and I have found that it increases peristalsis. It is likely that this action is also extended to the contractile element of the blood-vessels. This slight increase of pressure is observed even after destruction of the vaso-motor centres in the medulla oblongata, it cannot be definitely traced to alterations in the heart-beats, it is not due to struggles in the animal, since it occurs in the curarized condition, and hence is, doubtless, dependent upon a direct action on the vessel walls. This conclusion receives support in the evident condition of

vaso-motor paralysis, which is finally observed in animals long under the influence of toxic doses. Thus caffeine would act primarily as a direct excitant and secondarily as a direct depressant to the contractile tissue in blood-vessel walls. That such changes occur seem further sustained by the observations on man noted in the early part of this paper, which indicate that an increased degree of tension of the arterial walls is sometimes distinct, and also by the researches of Phillips and Bradford (*Journal of Physiology*, viii., 1887, p. 117) on the kidney, in which the blood-vessels were found primarily constricted. Roy and Sherrington (*Journal of Physiology*, xi., 1890, p. 98) state, as a result of direct experiment, that therapeutic doses of caffeine cause in the cerebral vessels a slight primary expansion, then a slight transient contraction, which is followed by a persistent and well-marked expansion. These changes were the reverse of what took place in the systemic vessels in general, hence the most marked action on the capillaries, as a whole, would be to cause a persistent and well-marked constriction.

The actions, therefore, on blood-pressure are also complex: there is a tendency to increase the pressure by a primary direct stimulant action on the blood-vessel walls; and an action to diminish pressure by a depression of the heart's energy, and a secondary paralysant action on the vessel walls causing vascular dilatation.

It is a matter, doubtless, of much clinical importance to note that in a number of my experiments a sudden heart-failure occurred at a time when the circulation was well maintained. While in some instances this can be attributed as an immediate result of an intravenous injection of the drug, in others it is clearly not. For instance, in Experiment 4, it will be observed that the pressure was but two millimetres below normal, the heart-beats were increased in frequency from 102 to 264 pulsations per minute, no caffeine had been given for eight minutes, yet in a moment, without any warning or apparent cause, the heart ceased beating, and upon an immediate autopsy was found in diastole and unirritable. These remarkable results indicate that caffeine, or coffee in large quantity, may prove of great danger in cases of cardiac weakness by inducing sudden failure.

In the experiments conducted on mammals by different investigators, with the exception of those by Binz and Leven, the drug was intravenously injected. These two gave the caffeine hypodermically, and while they found that the pulsations of the heart were decidedly increased they also state that the arterial pressure was similarly and notably affected. Since the results of my own experiments are in accord with those of Aubert and Hasse, it was thought that the method of administration might be accountable for this curious difference. Consequently, I was led to make a fourth series of experiments, in which doses generally similar to those used by Binz were administered under the skin. Four experiments were made, and the results of two are given in detail:

FOURTH SERIES.—*Caffeine injected Hypodermically.*

Experiment 11.—Dog; weight, 9.183 kilos.

Time. hrs. min.	Pulse per minute.	Mean pressure m.m.	Remarks.
.0	90	154	Injected hypodermically 9 c.c., 7 per cent. solution.
.5	93	154	
.9	99	158	
.12	102	154	
.15	117	156	
.20	90	154	
.25	98	156	
.30	97	156	
.40	104	144	
.55	99	132	
1.10	...	...	Injected 15 c.c. in three places.
.15	148	128	
.20	168	132	
.30	186	132	
.35	246	92	Animal killed.

Experiment 12.—Dog; weight, 5.214 kilos.

Time. hrs. min.	Pulse per minute.	Mean pressure. m.m.	Remarks.
.0	126	146	Injected hypodermically 16 c.c, 7 per cent. solution.
.3	150	136	
.7	141	134	
.10	146	134	
.12	128	130	
.15	126	130	
.17	132	130	
.20	126	130	
.23	126	128	
.28	126	127	
.35	132	123	
.40	135	118	
.45	132	106	
.55	126	100	
1.00	126	81	Animal killed.

In all four experiments the doses were fatal, although the animals were not allowed to live beyond the period necessary for the

purposes of the observations. In three of them the pulse was increased to a variable extent; but, on the whole, to a far less degree than when the drug is intravenously injected. In the fourth experiment the pulse was subnormal throughout, and in Experiment 12 above recorded the increase was not great. The blood-pressure in all four experiments never went to an appreciable amount above the normal; indeed, never more than observed in perfectly normal animals without any drug; but, on the other hand, invariably showed a definite and decided tendency to a progressive decline during the progress of the observations. It is impossible to harmonize these results with those of Binz and Leven. Binz made but two experiments, in one of which the pneumogastric nerves were cut; in both the animals were profoundly under the influence of alcohol, which certainly vitiates the results. Leven made four experiments,—two on normal animals and two in which the pneumogastric and cervical sympathetic nerves were cut. In all of these only two records in each were made,—one before and the other after caffeine. His measurements, if made in centimetres of mercury, indicate that the pressure obtained before giving caffeine was in every case much lower than the average, and it is probable that when these primary records were made the animals had not entirely recovered from the effects of chloroform, which was probably used to anæsthetize the animals for the operation, and which caused a diminution of pressure, which continued at that time.

From the above records the following conclusions are deduced:

1. The pulse-rate may be diminished during the first and last stages of the poisoning, but is generally decidedly increased. During the first stage the diminution is due to a stimulation of the cardio-inhibitory centres in the medulla oblongata and heart, and during the last stage to a direct depression of the heart. The increase in the pulse-rate is due to a depression or paralysis of the above cardio-inhibitory centres.

2. Arterial pressure during the first stages of poisoning is generally unaffected or diminished, but occasionally a trifling increase is noted; during subsequent stages it is diminished. The increase is due to a direct stimulant action upon the blood-vessel walls, increasing vascular tension. The diminution is due chiefly to a direct depression of the heart, and to some extent, doubtless, to a secondary paralysant action on the vessel walls.

3. The acceleration of the heart-beats may be accompanied by no appreciable alteration in blood-pressure, but generally by a more or less decided diminution, which is dependent upon cardiac depression.

4. Caffeine diminishes the heart's efficiency for work, arrests it in diastole, sometimes induces sudden paralysis, and is, therefore, a cardiac depressant.

5. The asserted stimulant action upon the circulation is, doubtless, subjective, and dependent upon an excitation of the cerebral centres.

ALKALOIDAL STRYCHNINE IN EFFECTIVE AND CONTINUED USE UNSAFE.

STRYCHNINE SULPHATE NON-CUMULATIVE. A REPLY TO H. F. MEIER.

By Henry M. Field, M.D., Newton, Mass.

THE March issue of the Therapeutic Gazette contains a *critique* upon a section of my paper published in the January number, in which strychnine, alkaloid and salt, was discussed. The spirit and language of this review by Mr. Meier are so courteous as to suggest a most courteous treatment both of himself and his strictures; none the less, I believe, that the interests of practical medicine demand from me a plain and pointed reply. And first, Mr. Meier does not make himself altogether clear, at least to my own comprehension, in some points of his discussion; and where his meaning is obvious enough, more than once, in my belief, his assertions and conclusions are calculated to lead the practitioner astray. As an illustration of obscurity, I need but point to a portion of the first paragraph of his article (I will not take space to quote in full) beginning, "The physician with his accumulated experience;" and so continuing to the close of the paragraph. I have read and read again—I have asked several medical friends to read—this section of the paper, but suspect that it holds here as elsewhere; the English sentence, which is not intelligible on first reading, will not often give up its meaning through subsequent and repeated perusal.

Again, physiological and clinical or therapeutic conclusions, which are solely based upon chemical analogy, which are established alone upon the authority and experiments of the chemical expert, are always liable to contain a large element of error. How easy it

would be to fill pages with examples of such error in the near and remote past, but we mean to be brief, and so must forbear. With every apology to Mr. Meier,—and assuming his vocation to be that of the chemist and not of the clinician,—I will venture to assert that it is not the *human* stomach which he has in view, and to which he constantly alludes and appeals in his recent paper. He may not be conscious of such fact,—fact although it be,—but it is the *laboratory* stomach—the stomach which has its origin in, the functions of which are controlled by, the imagination of the professional chemist—which he has made the object of his recent study. This is the kind of stomach which he shows to be practically sure of holding four ounces of fluid, as a minimum, at all times and in all conditions, both of health and disease. Such was the stomach which dissolved the alkaloidal strychnine every time, although "*the addition of two minims of acid sulphuric, dilute*" (U. S. P.), seems to have been found convenient.

And, confronted with whatever argument, with purpose to support the claims of alkaloidal strychnine, we meet it with the challenge, *cui bono!* What good purpose can possibly be served by a substitution of alkaloid for salt? Alkaloidal quinine, *per contra*, has its claims and its especial uses; the dose of quinine being always integral and often massive, there may be marked contrast in favor of the alkaloid, as respects the quantity in the aggregate of active principles which the patient receives. Moreover, chemical considerations often indicate resort to alkaloidal quinine,—as in the making of certain composite pills. No such observations apply to the alkaloid of nux vomica. What possible *raison d'etre*, then, does it present? None, so far as the present writer can ascertain, except that when we urge the withdrawal of this insoluble body from pharmacy and the universal substitution of its congener, the at all times and readily soluble salt (sulphate), we join issue with prominent manufacturing pharmacists of the country, who have—somehow—chiefly chosen the alkaloid in the fabrication of their varied and innumerable pills and granules. (And mark, *passim*, a strange inconsistency: they give us the sulphate when it is proposed to prescribe a minute, homœopathic dose ($\frac{1}{200}$ to $\frac{1}{100}$ grain); if we would employ the drug in more effective dose (*e.g.*, $\frac{1}{30}$ or $\frac{1}{20}$ grain), we must seek another source of supply or accept the alkaloid of strychnine).

Now, advance in knowledge is constantly making trouble for doctors and druggists. How often has this been illustrated in the department of therapeutics during the past ten or fifteen years. But, as respects the manufacturing houses just alluded to, is it not at their own option, because at their advantage also, that they profess *to serve the practitioner of medicine?* It only requires that evidence be presented that these medical purveyors have made a false move, in any particular, for them, doubtless, to recede from such position and take another and advanced step.

And, indeed, were it admitted that Mr. Meier's experiments and arguments have much greater cogency than we can admit, our position is still held with insistence. The profession does not, even yet, *know for certainty* that this most potent, most insoluble remedy,—the alkaloid of strychnine,—can with safety be intrusted to the stomach,—*i.e.*, in the larger doses and by method of continuous exhibition. Whereas, as concerns the salt, *we do know*. It is soluble, invariably and freely so. Though the stomach, by hypothesis, contain but one drachm of neutral fluid, the $\frac{1}{20}$ grain sulphate of strychnine is, by assurance, provided for.

Again, as to the kindred and closely involved question of "*cumulative action*," Mr. Meier, with brief reference and show of slight effort, takes up my note in a previous paper upon this phenomenon; but, if I rightly read this part of his article, he does not squarely meet me in the issue I make. It is true his position seems to be intrenched by a quotation from one who stands prominent among the most authoritative teachers and writers on therapeutics,—Lauder Brunton. And yet it may well be doubted if upon any other moot question conceivable, an appeal taken to this higher court in our specialty could be so unfortunate. Reference to the action of digitalis is pertinent because of the close analogy which this drug presents, in important particulars, with the action of strychnine. And at just this point the authority and correctness, in conclusion, even of Brunton, must be called in question, this only by suggestion, and, so far as we must, to support our own position and as the subject has bearing upon our present topic. Digitalis, then, can never, *in medicinal doses*, "diminish the secretion of urine, by causing a contraction in the renal vessels." It would be consistent with data, which have been repeatedly published, on the authority of Brunton, for that eminent therapeutist to

hold such a view; but it is, none the less, heterodox. Such "contractile" action is a part of the toxic, and not of the medicinal, physiological influence of digitalis. It is impossible that it should obtain under the latter influence.*

And now, in conclusion, we are prepared for our word upon "*cumulative action.*"

It is not long ago that the cumulative action of digitalis was a veritable *bête noir* with the medical profession; if any demon or spectre has been exorcised, as our knowledge has increased, it is this. Perhaps Fothergill was first, *a priori*,—as a deduction of physiological investigation,—to declare that digitalis could never become cumulative so long as it was prescribed to meet the correct indications and prescribed in medicinal dosage. Balfour and many others, from a clinical stand-point, have since endorsed this statement. If the present writer knows anything to be true in medicine, out of his own experience and observation, he knows that this statement, and the physiological principle on which it rests, are true. It is only as the drug is given in such quantity, or with such frequency, as to produce a cardiac condition, suggestive—however remotely—of the tetanized heart, and a contracted state of arterioles and capillaries, that digitalis can show the phenomena of accumulation; but this is the operation of a poison and not of a medicine.

Now, if digitalis can be taken continuously, t. i. d., for three years together, wisely, safely, beneficially, as we know it can, how long can *soluble* strychnine (under given circumstances, exerting a like influence upon heart and kidneys, as it surely does) be taken by continuous method? We know, from repeated experiment, that in dose of $\frac{1}{60}$ grain, t. i. d., it can be so received for *three consecutive months;* and why not, then, for six consecutive months? or for however long a period, so far as we meet indications and do not exceed physiological impression?

The present writer has had a considerable experience, the last year or two, in this for of medication, and has never met with a mishap. Would Mr. Meier, or any other a vocate of the *alkaloid*, venture, *in such use* the drug, to substitute alkaloid for salt? greatly doubt it.

And now, as we close, permit space f statement of *axiom* (as we must believe o assertion to be), and then for *corollary.*

It is an *axiom* that any medicine acting, digitalis does, on heart and kidneys, or acti after such analogy, provided it be skilful exhibited, *cannot accumulate in the syste* however long such exhibition be kept u Continuous solubility on the part of t drug, from the "therapeutic moment" enters the system to the "therapeutic m ment" when it leaves the system (by proce of elimination), is, of course, an essenti condition of the principle which we asse Alkaloidal strychnine does not meet th condition.

Corollary.—"The writer's personal exper ence" (I quote from Mr. Meier's paper), an to this I may add my own repeated profe sional experience, are concerned with an o casionally observed phenomenon of stryc nine medication, which has been too ofte forced into evidence of a so-called "cumul tive action" of this remedy. Few other pow erful remedies are so apt to be disturbed b idiosyncrasy in their wonted and expecte remedial action as is strychnine. But suc disturbance appears relatively early in th use of the drug; it no more concerns accu mulation than it calls in question the skill o the prescriber, who may know all about hi remedy but has not yet learned his patient' constitution. One case occurs to me, an will suffice as illustration. An adult femal patient, with nothing in history, temperam ment, or whatever to suggest to me the ex perience which ensued. $\frac{1}{60}$ of a grain, con tinued t. i. d. for two days, so exaggerate susceptibility to auditory impressions that th usual surroundings of a quiet home caused intolerable discomfort to the sense of hear ing, unless the ears were packed with cotton On the other hand, I sometimes wonder tha a few patients did not dismiss their doctor when he was so young in medical experience as not to appreciate the difference betwee salt and alkaloid; and when upon several weeks' experience with the larger doses of the latter, the torments of tetanic twitches in certain groups of muscles and of "electric shocks," suddenly set up, testified to accu mulation of the powerful drug in the body.

* The confusion in his comprehension of its action, the incredulity of Lauder Brunton concerning the practical value of digitalis as a medicine, because of the necessary antagonism (*sic*) between the "contractile and staying" action, which the drug brings to bear on the capillaries, and its "forcing action" upon the heart (and we are not aware that the distinguished professor has ever confessed to having received further light on this perplexing matter), illustrates a partial knowledge and erroneous view upon his part.

It is impossible, we repeat, for *medicinal digitalis to contract* capillaries or *stay* their current of blood.

THE TREATMENT OF BOILS AND CARBUNCLES AND OTHER SUPPURATING DISEASES BY THE USE OF CALCIUM SULPHIDE.

By John Aulde, M.D., Philadelphia, Pa.*

WITHIN the past two years I have read with interest many suggestions covering the treatment of boils and carbuncles; and the improvements indicated by our increasing knowledge of antiseptic methods, it seems, would have been sufficient to point a more rational treatment than any which had preceded the study of bacteriology. The object of the present paper is more for the purpose of calling the attention of the general practitioner to a plan which has been followed with very satisfactory results during the last five or six years than with the intention of finding fault with the advice given in the editorial of the *Medical News* of this city (February 22, 1890) with reference to the use of iodine as advised by Beauquinque. Still, I am not willing to accept all the suggestions put forward in the article in question, although no fault can be found with the use of iodine, as an antiseptic of the highest value, under certain conditions and restrictions. While iodine is an efficient antiseptic, we must bear in mind that it is more or less irritant to the living tissues when applied in considerable strength. Whatever its action upon local septic affections, it would appear almost impossible that the use of the remedy should be available in overcoming the influence of microbes where those micro-organisms are situated at such a depth below the surface, as is the case with carbuncle, and it would require some stretch of the imagination to assume that these diseases—boils and carbuncles—"are caused by the entrance of specific microbes into the cutaneous glands."

If the theory was advanced that these specific microbes, or the poisons developed therefrom, were transmitted through the circulating fluid to the seat of inflammation, there would be less objection to that than is afforded by the unsupported statement quoted above. In the case of carbuncle, for example, where the origin of the disease is situated beneath fasciæ, which present an irresistible barrier to the passage of microbes, in my opinion, the assumption is unwarranted by the facts, the truth of which I shall attempt to demonstrate by an account of the successful treatment of cases in which this theory is wholly ignored. In this connection it should be noted that carbuncles, boils, abscesses, and felons may be, and often are, the result of injury to the healthy tissues. How few cases of spontaneous palmar abscess are seen by the surgeon? One of the first questions which the surgeon puts to the patient is, At what time, or how long previously, has the patient injured the palm of the hand by the use of a poker, the injudicious strain in manipulating a cane, or other incident, according to the particular business in which the patient may at that time have been engaged? Inquiries of this nature certainly give color to the theory advanced above,—viz., that the disease may be due to the presence of microbes, or the poisons developed therefrom, distributed through the medium of the circulation. Proof of this assumption is apparently complete from our knowledge of the effects of injuries and contusions which cause congestions but do not produce abrasions of the skin. The superficial tissues are discolored, the sensory nerves are obtunded at the most central portion of the injury, while the functions of those adjacent thereto are heightened, due to the swelling consequent upon the increased supply of blood to the parts.

Assuming that this represents the main features attending the development of boils and carbuncles, it seems fair to estimate that the condition depends upon causes coming from within, or developed incidentally, without the rather far-fetched theory that the ubiquitous microbe penetrates the cutaneous glands. If these micro-organisms possessed the power claimed for them, no one would for a moment be safe from their mephitic influence, and it would be but a question of time when human life would be cut off from the face of the earth. The investigations of Park, of Buffalo, N. Y., show, beyond the question of doubt, that pathogenic bacteria in closed cavities may be absorbed, and the treatment of numerous cases of boils and carbuncles by internal medication, with a view to render their activities less harmful to the system, prove that, if microbes are present in the incipiency, their rapid absorption or destruction may be favored by the judicious use of calcium sulphide, thus converting a most malignant affection into one which is comparatively benign in its effect upon the economy, and at the same time short-lived in its activity.

* Demonstrator of Clinical Medicine, and lately Demonstrator of Physical Diagnosis, in the Medico-Chirurgical College of Philadelphia.

The treatment I would recommend to the attention of the medical profession for boils and carbuncles is comparatively simple, and may be formulated as follows: When the disease is seen in the early stages, before suppuration and breaking down of tissues have occurred, the affected area should be carefully washed with an antiseptic solution, and, where the application can be made, a little dry cotton-wool should be used, with a suitable bandage to keep it in position, and the patient restricted as to diet and exercise, when calcium sulphide should be given in doses of $\frac{1}{10}$ grain every hour or two. In case the pain is severe, and there is considerable swelling, which occurs within one to three days after the first symptoms are noticed, and before any suppuration has taken place, an ointment of belladonna or carbolic acid should be applied in order to keep the integument soft, but no irritants nor poultices must be used for the purpose of hastening suppuration, for that of all things is the very complication to be avoided.

While admitting that counter-irritants do sometimes apparently show good results in aborting diseases of this kind, it is a fact that such treatment more frequently fails, and then it is that we have more difficulty in maintaining an antiseptic condition. Especially is this noticeable when surgical interference in the shape of an incision is demanded. Unfortunately, I think, for our practice, the abuse of poultices has the effect of precipitating the formation of pus, and, when seen in the early stages, the patient should be cautioned to avoid them. It does not follow, however, that they must not be used at a time when the physician finds there is a special demand for them, but rather that they should be abandoned as a routine practice. When pus has accumulated, and an incision has been made to relieve the tension and evacuate the cavity, there are occasionally times when a poultice for the period of twenty-four hours may favor resolution and hasten recovery, but they must be applied hot and frequently changed. The abuse, not the use, of poultices is that against which I contend, and most physicians, who will follow the plan here outlined, I am disposed to believe, will take kindly to the method.

It will be observed that I have given no special directions regarding the antiseptic measures to be adopted in making the incision, but that I do not deem necessary, as the usual local antiseptic precautions are to be carried out throughout the entire treatment. Whether the incision is made with the scalpel, or whether the pus is evacuated by means of the aspirator, is to my mind a matter which should be left to the attendant, but no modern surgeon would think of attempting to evacuate the abscess through the medium of a poultice applied day and night until the tissues had become broken down and rotted, as was the practice twenty-five years ago. The indiscriminate use of poultices not only increases the amount of suppuration, but it also tends to favor the development of sepsis, and consequently the less we have to do with them the better it will be for the patient and for the reputation of the profession.

The idea of aborting boils and carbuncles by means of medicinal treatment is a very seductive one, but doubtless the suggestion will be pooh-poohed by surgeons, although they take pleasure in asserting that counter-irritants may occasionally accomplish the object. Although it may appear somewhat extravagant, I make the statement that boils and carbuncles, in their early stages, can often be aborted by adopting the suggestions regarding treatment already announced; when they have so far progressed that suppuration is inevitable, the malignant character of the disease can be overcome and suppuration kept well in hand by the judicious use of calcium sulphide. This remedy should, therefore, be promptly administered and regularly continued, but not to the exclusion of stimulants, as indicated by the condition of the system, together with the adoption of the necessary antiseptic precautions. I am in a position which enables me to confirm all that has been said of the therapeutical value of calcium sulphide by Dr. Mortimer Wilson, of Port Huron, Mich. (THERAPEUTIC GAZETTE, p. 306, 1888), in the treatment of boils, abscesses, pustular acne, and leucorrhœa, and desire to add to the list a number of other diseases which are not infrequently rebellious to the ordinary methods of treatment.

The treatment of felon (paronychia, cacoparonychia) has always been regarded an exceedingly troublesome subject in the hands of the general practitioner, and in the larger centres, specialists, giving their entire time and attention to this matter, have sprung up. Although there may be some doubt about these specialists, so called, having mastered the pathology and treatment of the disease more thoroughly than others, it shows that there is a feeling among the laity that a

me giving his particular attention to this pecial branch should be better qualified, and t shows further that the number of cases is rger than at first we would expect. Almost very one who has suffered from felon will e able to show the effects of treatment in he shape of a crippled finger or thumb, and ot a few of them can tell exactly the num-er of pounds of flaxseed they used in pre-paring poultices, the number of weeks they were unable to work, as well as the exact number of nights they were compelled to walk the floor on account of the excruciating pain. Both science and society alike demand that improvements should be made in the methods of treatment, and while I cannot object to surgical interference at the proper time, I most strenuously object to all palliative remedies which have for their object the breaking down of tissues with a view to favor suppuration. Turpentine, carbolic acid, iodine, nitrate of silver, and other caustics and escharotics must be abandoned when it is shown that their use does more harm than good.

The plan of treatment briefly stated will run about as follows: The patient having been advised to place himself in the most favorable condition with a view to modify the circulation, the use of vascular sedatives will be indicated, as aconite, gelsemium, or veratrum, but preferably gelsemium. The excruciating pain due to the inflammatory action is best controlled by the local use of water and clay, prepared in the form of a semi-solid, and kept constantly on the affected finger in such a manner that it will answer as a temporary support. Turpentine, nitrate of silver, and common lye, while acting as counter-irritants, accomplish but little more than this, because they form a crust which reduces the superficial pain, and this at the same time acts as a support to the underlying tissues. But the inflammatory action progresses without let or hinderance, while the moist clay answers as a protective and serves to reduce the local heat, two very important points. The continuous exhibition of calcium sulphide, as heretofore indicated, will shortly reduce the activity of the inflammation, and when seen early, few cases will go on to suppuration, while the demand for anodynes and poultices is wholly eliminated from our treatment. Loss of sleep is rare, and within a week, sometimes less, the patient is able to use his hand as well as before the accident.

The diseases met with by the general practitioner in which calcium sulphide may be used with benefit are so numerous that it would be impossible to point out, as I have done in the previous instances, the special details of the treatment; but a few of them will be mentioned, together with some suggestions which will put the student in the proper channel for investigation. In doing so I wish it to be understood that I do not claim priority in the use of the drug, although during the past few years several papers from my pen have appeared upon the subject. Possibly I may be entitled to some credit for extending the usefulness of the drug, by finding some new applications for it, and for calling attention to these and to the more general uses as originally recommended by Dr. Sidney Ringer, of London.

In the treatment of ovarian and uterine affections, calcium sulphide often serves a useful purpose by preventing the formation of pus; or when appropriate local treatment is instituted, the disappearance of long-continued pain may be sufficient to warrant us in concluding that the formation of pus has been averted. Not infrequently displacements of the uterus are attended with ovarian pain, which, if not given attention, result in salpingitis and a long train of ills, that are only relieved after years of suffering by resort to the knife. I have been fortunate in quite a number of instances in overcoming this chronic ailment by suitable local treatment and the exhibition of calcium sulphide in doses of $\frac{1}{10}$ of a grain at intervals, so that five tablet triturates each containing this amount are taken daily. Those who have doubts about these statements can easily settle the matter to their own satisfaction in the course of a few days by selecting from among their patients some poor bed-ridden woman who has been half invalid for several months, or possibly years. Arguments of this character are the most convincing, but the treatment must be instituted under the restrictions mentioned,—viz., the uterus, if displaced in any way, downward, backward, or forward, should be kept in proper position, preferably by the use of a wool tampon made of real wool. Chronic uterine catarrh may be successfully treated in the same manner, but in using the wool tampon it is advisable to introduce along with it a paste made of iodoform, with lanolin and Canada balsam as a base.

Bronchial catarrh, acute, subacute, or chronic, is always benefited by the use of calcium sulphide. In the acute stage, when the cough is severe, the dose mentioned

should be given every hour, and along with it may be given from $\frac{1}{60}$ to $\frac{1}{100}$ of a grain of morphine sulphate. By a rough estimate, I should judge that two-thirds of all the coughs and colds might be treated thus, and with much better results than by the administration of nauseating mixtures, such as are concocted by the old-fashioned practitioners. Subacute and chronic cases will not require any anodyne, but may demand something in the nature of a vascular stimulant and tonic.

Croup is quickly amenable to this method of treatment (calcium sulphide), and when begun early and used faithfully, there will be less likelihood of intubation being demanded.

In the case of toothache and earache, and, in fact, in all cases where suppuration is threatened, calcium sulphide produces results which, to say the least, are remarkable. Take such wounds, for example, as that produced by stepping on a rusty nail, poisoning from a fish's fin, the symptoms of tetanus produced by sticking the end of a scissors into the wrist, and one may have some idea of the manifold uses to which calcium sulphide may be put. Cases of the kind mentioned, which presented most formidable appearances, threatening to develop into tetanus without a moment's warning, and other cases of like character, I have seen subdued, and all the active symptoms and pain disappear within twenty-four hours after instituting treatment. Of course, proper attention was given to cleanliness, but I cannot bring myself to believe that such details as suggested in this matter would have been sufficient to control suspicious indications in so short a time.

My paper has already exceeded the length originally intended, and I shall close the subject until some who read this want more detailed information upon the various topics here noted.

1910 Arch Street.

AN APPARATUS FOR THE COLLECTION OF DUST AND FUNGI FOR MICROSCOPICAL AND BIOLOGICAL TESTS.

By Samuel G. Dixon, M.D., Philadelphia, Pa.*

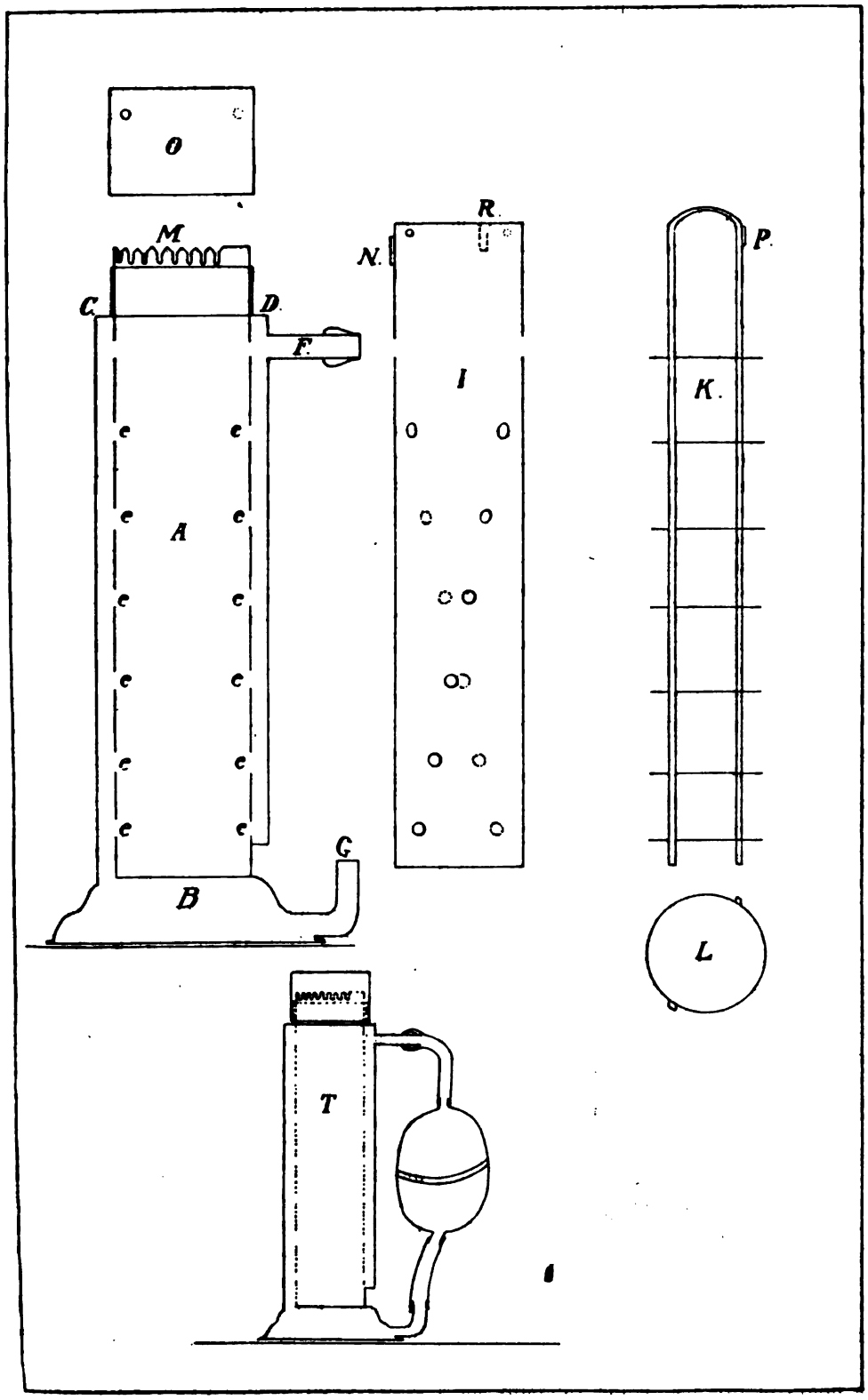
THE instrument about to be described is adapted to the drawing of the air containing micro-organisms or microscopical *débris* from the floors or walls, and depositing it on cover-glasses for microscopical examination or on plates containing culture mediums.

A trial experiment was made with it in a street railway-car in Philadelphia. The dust from the floor of the car was drawn on to cover-glasses smeared with a sticky solution of gum arabic. On examination under the microscope tubercle bacilli were found in the dust drawn from the floor of the street-car.

Reference to the illustrations show a cylinder, "*A*," about six inches in length on a base, "*B*," two and one-half inches in diameter. On either side of the cylinder, "*A*," running lengthwise, are chambers, "*C*" and "*D*," four-fifths of an inch wide and one-quarter of an inch in depth. These chambers communicate with the interior of the cylinder "*A*" by means of round holes, "*e, e, e, e,*" opening directly opposite each other. Chamber "*C*" opens into the base "*B*" and chamber "*D*" into the tube "*F*," which latter is attached to the tube "*G*" by a connecting rubber tube and exhaust-bulb. "*I*" is another cylinder which fits closely into "*A*." It has two rows of holes corresponding to those ("*e, e, e*") in "*A*," but at an angle to the perpendicular, so that only one pair open into the chambers "*C*" and "*D*" at a time. "*K*," of which "*L*" is a top view, is a rack to carry cover-glasses or thin glass plates: it slips into "*I*," each shelf of the rack coming just below a pair of the holes opening from the chambers "*C*" and "*D*." The notches "*M*" are to indicate which pair of holes in "*I*" are open to the holes "*e, e, e, e*" in "*A*." "*O*" is a cap which closes the top of the cylinder "*A*." The small holes in the top of "*O*" and "*I*" correspond and are for a pin, which enables the operator to turn "*I*" without exposing the glasses on "*K*" by simply raising and turning "*O*." The projection "*N*" on "*I*" fits into the notches "*M*," so that one pair of the holes in "*I*" is always opposite a corresponding pair in "*A*." The projection "*P*" on "*K*" fits into the notch "*R*" in "*I*," and keeps "*K*" from turning, so that the strips supporting the shelves of "*K*" will not block up the holes in "*I*" and "*A*." "*T*" represents apparatus ready for use.

To operate the apparatus, the rack is loaded with cover-glasses coated with glycerin or some other sticky substance that will stand sterilizing, placed in "*I*," and "*I*" in "*A*," with the top holes in both cylinders opposite each to each. The cap "*O*" is then placed on "*A*," and the pin slipped through the small holes in "*O*" and the top of "*I*," so

* Professor of Hygiene, University of Pennsylvania.


O
M
C
D
F
A
B
G
R
N
I
P
K
L
T

that the apparatus may not be opened by accident. To draw air over the plates, the cylinder "*A*" is placed with its base covering the space on which the dust to be examined rests: the exhaust-bulb is squeezed, forcing air through "*G*," and thus agitating the dust under the base. The bulb now being allowed to inflate, air is drawn through "*F*," the top-holes "*e*, *e*" in "*A*," from the chamber "*C*," which in turn gets its supply from the space under the base where the dust has been agitated by the first puff from the bulb. As this dust-laden air passes from the top hole in "*C*" to the corresponding one in "*D*" it rolls over the top cover-glass, leaving on the sticky surface of this a large portion of the dust, and especially of the micro-organisms which it carries. The top "*O*," and with it the cylinder "*I*," now being raised slightly and turned to the left the distance of one notch, the next series of holes and cover-glass are brought into the line of the current and the first ones cut off from it. This being continued, the whole number of plates are brought into service and charged with material to be examined, after which they can be taken to the laboratory for treatment without any danger of contamination or exposure. Of course, it is understood that the apparatus must be thoroughly sterilized each time after being loaded with cover-glasses and before use.

If it is desired to examine the air of an apartment rather than the dust lying on the floor or wall, the exhaust-bulb is disconnected from "*G*" but not from "*F*," and air drawn through the apparatus by compressing the bulb as before. If the capacity of the bulb be previously measured, of course the amount of air drawn over the plates is determined by the number of times the bulb is compressed.

2015 CHESTNUT STREET.

RUPTURE OF THE CHOROID IN A HÆMATOPHILIA.

BY J. A. PATTERSON, M.D., SALEM, N. J.

I HAVE to report the following case, remarkable in its history, which is, unfortunately, incomplete.

Jennie S., aged 22, whose father is of white blood, her mother a mulatto, occupation child's-nurse, consulted me April 21, 1887. A few hours before seeing me, the baby she was attending suddenly ran his finger into her *right* eye, striking the temporal side of the eyeball; there immediately ensued lachrymation, photophobia, and great pain at th point of the stroke, and, upon palpation, found slight conjunctival injection upon th temporal side of the eyeball only. No disl cation of lens or abrasion of the cornea wa found upon the most thorough examinatio The optic nerve was distinctly visible by th ophthalmoscope; no hemorrhage into vitr ous or upon the retina detected, althoug the media were clear. The photophobia an lachrymation interfered materially with m nute observation of the deep structures. Sh could read .05 Snellen with this eye for moment.

During the succeeding two days she suf fered intense pain, preventing slumber, al though she was taking a small quantity o morphine.

On April 24, the fourth day from the oc currence of the mishap, she had the mos painful night of the three, but dropped int slumber towards morning, awakening to fin the vision in the injured eye had suddenl declined to light perception only. Tensio normal; photophobia had disappeared; pai much better, located as at first, just unde temporal side of the supraorbital ridge, im mediately above the outer canthus. A feel ing of the eyeball being pressed outward wa also complained of. Optic media clear, n gross hemorrhages detected, although exam ination was not thorough.

The following day she reported having slept well the previous night without narcotics. The pain in the eye had subsided; a boring pain in right occipital region was noted, and continuation of the pressing outward symptom; no bulging, however, was visible. Vision has declined, so that she not even has light perception. I thought the case might simply be one of hysterica, but was confronted with my tests for diplopia and vision, giving no intimation of sight remaining. The vision of the sound eye was improved by a cylindrical lens $+.75_D$ ax 90°. No ptosis. The right eye cannot follow the movements of my finger, remaining motionless, while left eye converges, etc., promptly. Pupils were normal, and were equally prompt in their response to light stimulation. "In exceptional instances the pupil may still act perfectly, even although the eye is absolutely blind. In such cases the conductibility of the optic nerve and the reflex action which it produces on the ciliary nerves are unimpaired, but the image is not perceived by the brain" (Wells's "Diseases of the Eye," p. 215).

At this visit, photophobia, lachrymation, an

tion having subsided, I was enabled to make a thorough examination of the fundusoculi, revealing a nerve slightly vertical oval, slight papillitis, some striation below, scleral ring intact, outwardly bound by small choroidal ring; no detachments of retina or hemorrhagic spots; there was, however, a choroidal rupture, which was undoubtedly recent, but contained no hemorrhagic effusions; fovea was not involved. My notes say that the vessels are slightly altered in calibre, but fail to specify. Tension was normal.

The history of the case as a "bleeder" is interesting. She showed me a small papule, scarcely elevated, upon the right malar bone. This blotch is subject at times to very severe neuralgic pains, accompanied by free bleeding. The quantity of blood lost has frequently been sufficient to produce entire blindness in both eyes simultaneously for one-half to one hour in duration. A week before I saw her she had a tooth extracted in a neighboring town, followed by alarming hemorrhage, which was with difficulty stanched by the combined aid of both surgeons and dentist; always has suffered menorrhagia, at times metrorrhagia. She is subject to epileptic seizures, as is her mother. These spasms, however, appear to have no relation whatever to the attacks of hemorrhage.

For over two years I have attempted to learn the outcome of the case without success, the patient being in this city on a visit at the time of the accident, her home being near New York. I had her under observation a little over a week only, and am thus compelled to make a diagnosis of hemorrhage back of the optic globe, causing pressure upon the nerve-track, which might be found incorrect upon later observations of the case. This, with the visible rupture of the choroid, is sufficient to account for the total loss of even light perception.

69 Market Street.

CONTRIBUTION TO THE THERAPEUTICS OF HAY-FEVER.

By Alex. Rixa, M.D., New York.

I HAD the opportunity to pay particular attention to a well-defined case of hay-fever with reflex asthma, the patient, a near relative of mine, living in my house.

He acquired the disease in 1879, in Chicago, during the encampment of the Knights of Pythias on the camp-grounds, while lying in the damp grass. This happened about the 15th of August. Since then he is punctual in getting it every year between the 15th and 17th of August. Four years ago the case came first under my observation. I then advised my patient to go to the White Mountains, where he would enjoy immunity. However, being tired of the uniformity of his yearly pilgrimage, he decided this year to stay at home and see how far I could benefit him.

I do not intend to enter into a detailed description of symptoms, etiology, or pathology of the disease, but shall confine myself to give a short history of the case, with its experimental medication.

B. L. H., a commercial traveller by occupation; 40 years of age; weighs two hundred and fifteen pounds; complexion dark.

On the 15th of August I examined his nostrils, and found but very little hyperæmia of the mucous membrane. On the 16th, however, in the morning early, the characteristic sneezing commenced. Being a powerful man, this sneezing resounded through the whole building, arousing all the sleepers.

On examination, I found the mucous membrane of the middle and inferior turbinated bones suffused and very sensitive. The margin of the eyelids and inner canthus irritated and itching. Pulse and temperature little above normal.

My treatment at this period consisted of antipyrin in 15-grain doses three times a day, or oftener, a solution of boric acid spray to the nose, and a wash of solution of plumbi acetas for the eyes.

Notwithstanding this treatment the irritation and hypertrophy of the mucous membrane in the nose increased rapidly, which compelled me to resort to a five per cent. solution of cocaine spray.

Towards evening the patient became feverish. A clammy sweat covered his body. The temperature rose to 100° F., with a serrated pulse, while the membranes of the nose became almost unmanageable. Douching with a ten per cent. solution of boric acid and frequent spraying with cocaine controlled the matter for a while.

By this time the patient had lost his appetite, with the senses of taste and smell, and could take only some bouillon, wine with Seltzer, and whiskey punches.

On the fifth day a careful examination of the nares revealed the following state in these organs: The middle and inferior turbinated bone was covered with hypertrophied mucous membrane, which completely occluded the

nasal cavities, giving rise to a painful feeling in the eyes, cheeks, frontal region, and even to the back of the head.

The following suppository gave me decided satisfaction at this stage of the disease:

℞ Cocaine hydrochl., gr. ½;
Morphine sulph., gr. ½;
Atropine sulph., gr. $\frac{1}{50}$;
Cacao butter, q.s., ad nasal suppos. No. 1.

It promptly stopped the discharge and pain for about four to five hours, and acted also very favorably constitutionally by drying the clammy perspiration and quieting the excited nervous system.

However, fearing the consequences in the continued use of so large a quantity of cocaine, I decided to resort to some more harmless but still more heroic measure in treating this obstinate membrane.

I exposed the parts with a nasal speculum to a Mackenzie light, and cauterized both sides with pure carbolic acid. I selected purposely this milder escharotic, not wanting to destroy the Schneiderian membrane, and with it a good part of the sense of smelling.

To my disappointment, however, this procedure was not a success, as in twenty-four hours the swelling of the membrane reoccurred almost to its former extent, with all the previous symptoms. One more trial I ventured to give it, with the same limited result.

From thence I commenced a series of experiments with the patient, who was a most excellent and submissive subject for these trials.

Antipyrin insufflated seemed to have an irritating effect. Bismuth and morphine acted quieting for a short time; so did eucalyptus; solution of menthol, twenty per cent., in olive oil, applied with cotton tampons, as well as in the shape of suppository, gave negative result. Antifebrin suppositories had a better effect, but the duration of relief was too short. I also tried quite a number of the old-time remedies, all with negative results.

Of course, between all these experiments I had to resort to either the cocaine spray or cocaine suppository, in order to give the patient the desired relief.

At this period I decided to try galvanocautery. I used J. C. Vetter's apparatus, eight cells only, for about twenty-five seconds, which shrunk the hypertrophied membrane to a great extent. I then cleansed the parts by irrigation with a fifty per cent. tepid solution of Marchaud's peroxide of hydrogen. This treatment filled the bill at last beyo my expectations, through the whole co of the disease. The above irrigation t of thrice a day, with the administration ozonized vapor inhalation occasionally, g the patient comfort and relief.

Three other cases of a milder type I h the opportunity of treating in the same w with the same gratifying result.

Worthy of notice is the observation I m in this case regarding the course which disease ran. I noticed mainly three parti lar stages, each of two weeks' duration. T first two weeks constituted the actual h fever, with its prevailing nasal sympto The second stage consisted of the prevail asthma symptoms, and the third stage sho the predominating catarrhal or bronch manifestations. Of course, the line of markation, so to speak, was not as clo pronounced as in any of our self-limi zymotic diseases, but sufficiently so to fo a characteristic point for investigators.

Considering the doctrine that reflex co or asthma is mainly produced in this insta by the stimulation of a certain sensitive a in a portion of the nasal mucous membra I gave myself the hope, in treating this c cumscribed area to the degree of allaying the stimulation, that I should succeed in avo ing the reflex asthma. However, such not the case, to my great disappointment, the asthma appeared just the same in d time, with all its sufferings to the pati notwithstanding that there was hardly a nasal irritation present.

In the stage of asthma my treatment c sisted of the following: I gave a lobelin (⅓ grain) every one to three hours, accordi to the symptoms, in all from three to sev grains per diem. Iodide of potassium, 15-grain doses, as often as indicated, es cially towards evening on cloudy, rainy da

The following prescription acted char ingly at a paroxysm:

℞ Fl. ex. quebracho, f℥i;
Fl. ex. grindelia robusta,
Fl. ex. yerba santa,
Fl. ex. myrtus chekan, aa f℥½.

Sig.—Teaspoonful every fifteen minutes in hot wate and brandy.

However, the peroxide inhalations gav also the most gratifying result. I use Marchaud's very ingenious hand atomiz and ozonizer, with peroxide and c. p. glyc erin in equal parts. It produces the vap mechanically, and I administered the sa

ut five to six times in twenty-four hours, inhalation not exceeding ten minutes. ugh this treatment acted like a charm through the day on bright days, it failed ive the patient thorough rest at night on st, damp nights. At such times Chap-n's spinal ice-bag was of great service to sufferer. I applied it about 10 P.M for first time, after all other remedies failed, had rather a peculiar experience with it. out twenty-five minutes after the applica-n his pulse sank from 94 to 60 beats per ute. I left it yet for a while, but the de-sing symptoms became alarming. His was ghastly white; the radial pulse ost imperceptible. Respiration 12 to the ute, and a cold, clammy sweat covered whole body, giving every indication of a gerous collapse. Under a persistent use stimulants and hot applications he slowly overed.

A few days after this attack, upon solicita-n of patient, I applied the bag once more, h no disagreeable effect. I followed it up y evening, which gave patient a thorough t's rest.

In the catarrhal period I employed the fol-ing medication: Terebene, terpine hydrate, monium carbonate, iodide of potassium, or potassii citratis, etc.

The cerium oxalate in tablet form, in 10-in doses, two to three times a day, did e good service.

However, at the termination of the last ge, nothing but morphine, with hydrocy-ic acid, would relieve the spells of cough.

Throughout the first and part of the second ge the appetite of the patient was very or, in spite of the administration of pepsin d pancreatin preparations. As stimulants, used Hungarian wine, whiskey, brandy, and ampagne. Patient lost twenty pounds in ight during this siege of sickness.

1264 Lexington Avenue.

THE ANÆSTHETIC PROPERTIES OF THE FLUORIDES OF ETHYL AND METHYL.

At the meeting of the Academie de Médecine, March 4, 1890, M. Moissan (*La France Médicale*, March 7, 1890) reported the results he had arrived at in the experiments which he had made in the attempt to obtain a knowledge of the properties possessed by these two anæsthetics.

Experimenting with guinea-pigs of the same weight, placed in bell-jars, with the chloride of ethyl, he found that anæsthesia of the cornea was rapidly produced, while the fluoride of ethyl either produced no anæsthesia, or of so slight a character as to be uncertain; while if the latter agent was administered in larger amounts it developed symptoms of poisoning. The fluoride of methyl is very slightly soluble in water, and, as a consequence, is but little soluble in the blood. Like the chloride of methyl, the fluoride of methyl is an anæsthetic, but is free from the period of excitation which is possessed by the fluoride of ethyl. This anæsthetic, according to the author, is perfectly comparable in all its effects to the chloride of methyl.

PANBOTANO AS A SUBSTITUTE FOR QUININE.

Panbotano, of the family of Leguminose mimosæ, is a tree indigenous to Mexico. Although it contains neither alkaloid nor glucoside, an alcoholic extract has been employed by M. Valude (*Journal de Médecine de Paris*, March 9, 1890) in the treatment of malarial fevers. The preparation which the author employed was made by macerating 70 parts by weight of the crushed bark in 1000 parts of water which was boiled down to one-half the volume. Of this, 1 pint might be taken in twenty-four hours by the patient. Dr. Valude has published notes of fifteen cases in which this remedy had been admintered, of whom eight were affected with intermittent fever, and which are the only ones of interest in this connection. It is claimed that in eighty-eight cases a single dose, or in some cases two doses, were sufficient to prevent the febrile access. The remedy is stated to be tolerably well borne, although in some cases a certain amount of vomiting is stated to be produced. These unfavorable effects, however, were avoided when the medicine was given on an empty stomach.

These clinical results admit of no physiological explanation, and the absence of an alkaloid in the plant, and the small number of cases reported by the author, go far to detract from the reliability of the results which were claimed to follow its administration. For a long time numerous substances have been proposed as a substitute for quinine, but as yet no one substance has succeeded in filling the bill. As to whether panbotano will prove more successful than other substances remains yet to be seen, though we must confess that we possess considerable scepticism in the matter.

The Therapeutic Gazette

EDITED BY

ROBERT MEADE SMITH, A.M., M.D.,
Professor of Comparative Physiology, University of Pennsylvania,

PHILADELPHIA.

GEO. S. DAVIS,
Medical Publisher, Box 470,
DETROIT, MICH.

Philadelphia, 714 Filbert Street.

SUBSCRIPTION RATES FOR 1890.

(Journal increased to 72 pages each month.)

THERAPEUTIC GAZETTE (postage included).....$2.00
THERAPEUTIC GAZETTE with MEDICAL AGE..... 2.50
THERAPEUTIC GAZETTE with AMERICAN LANCET 3 25
THERAPEUTIC GAZETTE with AGE and LANCET... 4.00

Foreign subscriptions may be ordered through our agent in England, Mr. H. K. Lewis, Medical Publisher and Bookseller, 136 Gower Street, London. Price 10s. Remittances may be made either by Postal Order or Stamps.

Price to Foreign Subscribers direct (postage included), $2.50 (10 shillings). English postage stamps received on remittances.

Editorial communications should be addressed 332 South Twenty-first Street, Philadelphia. Articles intended for the Original Department of the GAZETTE will be accepted only with the understanding that they are contributed to it exclusively.

Business communications should be addressed to the Publishers.

Leading Articles.

THE TREATMENT OF BILIARY COLIC WITH OLIVE OIL.

THERE is something very inexplicable in the action of olive oil as a cholagogue, suggested originally by Dr. Kennedy, and recommended by him in the strongest terms for use in the treatment of gall-stones. His results have been confirmed by numerous writers and ridiculed by others, but it seems that the former list is the larger one, and it is still further extended by the report recently made before the Berlin Medical Society (*Therapeutische Monatshefte*, No. 2, 1890) of three cases of biliary colic occurring in women, which are reported as thoroughly cured by the use of olive oil in large doses, even after other methods of treatment had failed. Dr. Rosenberg states that his experiments on animals, in contradistinction to those of Bidder and Schmidt and Prevost and Binet, have convinced him that olive oil fulfils both indications in the treatment of gall-stone,—namely, of increasing secretion of bile and diminishing its consistency, thereby facilitating the removal of concrements from the gall-ducts. In the discussion which the reading of this paper evoked, Virchow stated that previous experiments which he had performed convinced him that the oil immediately after its absorption in the intestinal canal was first carried to the liver, and from there into the gall-ducts to be excreted with the bile, a part of it to be again absorbed by the epithelium. We can scarcely comprehend, however, how this can be possible; as far as we know, oil is only absorbed by the lymphatics of the small intestine, and then carried exclusively through the thoracic duct to the venous system. To reach the liver, the oil would have to pass through the pulmonary circulation, the heart and aorta, and be again carried by the hepatic artery to the liver. There is no doubt that this is the normal method of absorption of oil, although, it must be admitted, that certain authorities, among them Hofmeister, claim that the adenoid cells of the stomach and small intestine are largely instrumental in absorption. If that be so, they might likewise assist in the absorption of oil. This, however, is a hypothesis against which a great deal may be said, and in favor of which there is but little evidence; while at most it can only explain a part of the process, for but a limited amount of the oil is capable of emulsification through the influence of the pancreatic juice and bile, and the excess escapes unchanged in the dejecta. If, therefore, large doses of olive oil have any action, it can only be explained as attributable to the mechanical action of the oil while in contact with the intestinal mucous membrane.

If we had an unbroken series of cures of biliary colic resulting from the employment of olive oil, such observations as the above, although they are based on admitted physiological doctrine, would be of little value. They would only prove that there was some error in the argument; the facts could not be cast aside. Unfortunately, however, we do not have invariable success, and, in fact, perhaps, as large or greater a number of failures are on record than of cures; in fact, it has even been claimed by some (*Boston Medical and Surgical Journal*, September, 1881, p. 261) that the masses evacuated after the use of large amounts of olive oil are not gall-stones but merely partially saponified pellets of olive oil. So many different reports have, however, been published of cases of biliary colic in which cure is claimed to have been produced, that such an explanation may be disregarded. Of course, partially saponified oily masses may be met with in the dejecta after the administration of large amounts of oil, but that does not

ove that true gall-stones may not be by its ency removed in other instances.

But we everywhere meet with contradic- n. Thus at the same meeting of the Berlin edical Society at which Dr. Rosenberg read paper referred to above Dr. Ewald stated t in his experience the use of olive oil the treatment of biliary colic had always led, and although perhaps in some cases ief might follow the administration of olive , it might be regarded as a clear case of *st hoc non propter hoc.*

THE THERAPEUTIC VALUE OF SULPHONAL.

IN previous issues of the GAZETTE we have alluded to the various warnings which ve been given by several authors as to the nger attending the use of sulphonal in large oses; and it now appears that the remedy, en in doses of 7½ grains, repeated several mes daily, is not free from danger, since Dr. mpfenbach (*Therapeutische Monatshefte*, No. 1890) refers to several cases where the con- nued use of small quantities of sulphonal oduced disagreeable consequences. He grees with the views of Erlenmeyer that a ngle dose of 30 grains of sulphonal should ever be exceeded, although he states that his perience has not yet enabled him to con- rm the statement that sulphonal may even produce dementia. He refers to the case of a woman without any heart lesion, who, after a dose of 30 grains of sulphonal, which, by the way, produced no hypnotic effect, suffered the entire following day from violent palpita- tion of the heart. Another case was that of a paranoic patient, 56 years of age, in whom 15 and then 30 grains were given without any unpleasant after-effects, but without pro- ducing sleep; while, when the dose was in- creased to 45 grains, sleep was produced, but on the following morning there was a slight chill, with coldness of the hands and face, trembling of the extremities, and a small, feeble pulse. Rest in bed arrested these symp- toms, although they returned again on the second administration of a dose of 45 grains. The author likewise calls attention to two cases of paralysis in which the administration of sulphonal caused an immediate increase in the paralytic symptoms, which again im- proved after the remedy had been sus- pended. Dr. Umpfenbach, therefore, con- cludes that sulphonal is not comparable to chloral either in certainty or safety of action. The author likewise publishes notes of a few cases in which chloralamide was employed as a hypnotic, and, although he admits that his studies have not been carried sufficiently far to warrant a positive statement, he yet feels that his experience shows, as has been to a certain extent the experience of others, that this new hypnotic is likewise not entirely free from danger and not absolutely reliable.

Drs. Popoffet and Podanovsky have made an elaborate series of experiments on frogs and dogs, which largely assist in explaining the apparent inconsistencies which have been attributed by different authors to the action of sulphonal, while partly confirming the statements so frequently alluded to as to the unfavorable effects which may follow its clin- ical employment (*Les Nouveaux Remèdes*, April 8, 1890).

These authors have found that introduced beneath the skin of the frog, in doses of $\frac{1}{12}$ to $\frac{1}{2}$ grain, in one per cent. solution, sulphonal ex- ercises a hypnotic action, whose intensity and length is proportional to the dose injected. They further observed a slowing of the res- piration, occasionally preceded by transient acceleration, while later there occurs marked reduction in sensibility and difficulty in the performance of voluntary movements, and, finally, diminution in cardiac energy. When the dose is increased above half a grain all the phenomena become accentuated, and the animal dies in complete prostration as a con- sequence of paralysis of the heart. The weak- ening of reflex action is partly due to depres- sion of the spinal cord and partly to action on the terminal sense organs, while interfer- ence with the voluntary movement is attrib- utable to paralysis of the motor-nerve cen- tres, the motor-nerve trunks and muscles remaining unaffected. Cardiac disturbance is due to the direct paralyzing action on the myocardium and the motor cardia ganglia. In warm-blooded animals sulphonal also has been found by these authors to influence a de- pressing influence on the nerve-centres, mani- fested at first by slight somnolence and un- certainty in walk when 3 to 5 grains for each two pounds of body-weight have been given by the mouth, followed by slight inco-ordina- tion of movement, profound sleep, and pros- tration when doses of 9 to 12 grains have been given for each two pounds of body- weight; and by death when the quantity given amounts to 14 grains for each two pounds of body-weight. Sometimes sul- phonal exercises a more or less prolonged excitation, the animal being in a state of

motor excitation, even although the movements are highly inco-ordinated. Among the phenomena constantly noted were great increase in the rapidity of the pulsations of the heart and of the respiratory movement, the former symptom being the first to appear in the majority of cases, and persisting up to the end; while the acceleration of the respiration appears later in the poisoning, and ordinarily disappears in the profound sleep which is produced. In toxic doses, sulphonal acts on the blood-corpuscles in the same manner as monoxide of carbon. The authors summarize their results as follows:

1. Sulphonal diminishes the excitability of the cerebral cortex and of the spinal cord.

2. In small and moderate doses, sulphonal increases blood-pressure through excitation of the vaso-motor centre and depression of the pneumogastric. In large doses it diminishes blood-pressure through paralysis of the muscular tissue and ganglionic centres of the heart.

3. The acceleration of the pulse is due in part to the stimulation of the accelerator nerves of the heart, but especially to the depression of the pneumogastrics.

4. Sulphonal, in small or moderate doses, does not modify the constitution of the blood, but in large doses it produces destruction of the red blood-corpuscles.

5. Sulphonal increases the reduction of oxyhæmoglobin in the blood, possibly by reducing the intimacy of union of oxygen and hæmoglobin.

Finally, Casarelli, as alluded to in the same number of *Les Nouveaux Remèdes* (April 8, 1890), claims that he has obtained satisfactory results in the treatment of diabetes mellitus with sulphonal. He maintains that sulphonal reduces the quantity of sugar and the quantity of urine, while at the same time relieving irritation, the effect being most marked when doses of 45 grains are given in twenty-four hours for several days in succession. In this dose, however, he likewise confirms the experience, now becoming almost universal, that sulphonal is frequently followed by extreme somnolence and vertigo.

THE ACTION OF OREXIN.

WHEN in the *Prager Medicinische Wochenschrift* for March 26, 1890, we saw a paper on the action of orexin, coming from the medical clinic of Professor Jaksch, w naturally expected that the history of the in troduction of new remedies would repea itself in this case: we looked for a warm rec ommendation of the new stomachic. Dr Glückziegel's report of the employment o this substance in seventeen different case cannot, however, be regarded as confirma tive of the enthusiastic recommendation o Professor Penzoldt, alluded to in the pre ceding issue of the GAZETTE. Dr. Glück ziegel seems completely to have failed in at taining any positive result from the use o orexin, either in improving the appetite an the general condition or the digestive capa city of the stomach. In some few cases ther was apparently an improvement in the appe tite, but the author shows that in these case one of which was that of acute rheumatism cured by salicylate of sodium, that the im provement in the appetite might equally wel be attributed to the cure of the affection b the sodium salt.

It is only just, however, to add that th doses given were smaller than those em ployed by Professor Penzoldt, and althoug the writer denies ever having noticed in healthy individuals the improvement of appe tite claimed by Penzoldt, yet he thinks tha in some cases of sickness it is possible tha orexin may have some value in improving th appetite. We can, therefore, not regard hi results as confirmative of Penzoldt's, but a emphasizing the necessity for further study with this substance.

Imredy (*Pharmaceutische Post*, April, 1890) has likewise failed to confirm Penzoldt's claim in regard to orexin. He has employed it in twelve different cases, and has found that in many instances it failed to produce any effect on the appetite, and in many led to the pro duction of nausea and vomiting. Dr. Imredy employed the drug in the same form and in the same dose as was recommended by Pen zoldt, so that we fear that in the estimation of Professor Penzoldt's results the wish was father to the thought.

MARK TWAIN ON THE THERAPEUTICS OF BY-GONE TIMES.

MARK TWAIN has been once more facetious at the expense of the doc tors. The February number of *Harper's Monthly* contains an article by this h morist, entitled "A Majestic Literary Fo

" in which he shows up the absurdities of time practice, when "the family doctor t allow blood to accumulate in the sys-," when "calomel was cheap," and every- was salivated for even trifling ailments! "literary fossil" is a "Dictionary of dicine," compiled one hundred and fifty s ago by Dr. James, of London, assisted by Samuel Johnson, of literary fame. Co- s extracts are made from this book, with ch the readers of the *Monthly* are regaled. those times, says Mark Twain, the physi- n went around with a hatful of lancets on person, and took a hack at every patient om he found still alive; even the healthy not escape, but were bled periodically. a common headache, the notorious Bone- would let blood from the temples without t, and it may be inferred that if he wanted comfort a man that had the stomach-ache, disembowelled him! The "licensed assas- s" (*sic*) of those times introduced the most dish decoctions into their patients' stom- s. Specimens of these are given from the k under criticism. Some of these for- e, like "Alexander's Golden Antidote," tained upward of fifty ingredients; the *ua limacum*" was a vile compound of den snails, earth-worms, sheep-dung, etc.! rk Twain gives these prescriptions in full, he quaint old-time style in which they were itten.

It is not the object of the present article to sent an abstract of this indictment of the edical profession of a former age, or to at- mpt to show that the indictment is *in no se* deserved. In the era when Johnson's Dictionary of Medicine" appeared (the mpilers of which could not properly be lled representative medical men) medicine s still encumbered with Middle-Age trash; e Baconian rule of exclusions and rejec- ons had not yet weeded the materia medica crudities. Amulets and charms were still rn by the common people, who appealed to ints as presiding over special diseases; it s believed by many that burnt deer's horns would cure fluxes, and that the lungs of a fox steeped in wine would cure asthma, etc. Men of the type of Sangrado and Bonetus still lived; in fact, they live now, though their charlatanry presents itself in a different shape. At the same time, there were practitioners of remarkable judgment and common sense, like Brown, Cullen, Benjamin Rush, who were an honor to the medical profession in the eighteenth century, and to whom we look back with pride to-day. It would be easy to show to what extent these men had felt their way out of the maze of baseless theories, and how far their practice, based on careful observation, was safe, sound, and rational. Take up, for instance, a work like Cullen's "First Lines of Practice," published a hundred and fifty years ago, and one will find very little there that bears any resemblance to the medical abominations (fit ingredients for a witch's caldron) which Mark Twain has gleaned from his "Literary Fossil." In fact, we challenge proof that Cullen or any of his enlightened *confrères* had faith in any such absurdities. The practitioner of that epoch was not always a fool or a "licensed assassin."

It is easy enough to present a sombre picture of any age by holding to view only the worst or most unprogressive aspects.

If there has been any progress in the treatment of disease during the past hundred and fifty years, it has been because of the prevalence of scientific methods; it has been because a more profound knowledge has been acquired of the human body and of its functions: it has been because of the development of chemistry and a better knowledge of drugs; it has been because of physiological experimentation and painstaking clinical study; it has been because the statistical method has been applied to therapeutics, and because the natural tendencies and self-limited nature of diseases have been recognized. The advance has been along a great many separate lines, and has been due not to the labors of any one man, but of hundreds and thousands of workers in all lands. It would have been impossible for medicine not to have shared in the progress of the age. We are surprised that Mark Twain should not have seen this fact, and when he gives all the credit of this progress (as he does) in the aforesaid article to homœopathy (?), and the influence which the homœopathist has had on his fellow-laborer, the "allopathist," he either intends a huge joke or he evinces the most stupendous ignorance.*

* "When you reflect that your own father had to take such medicines as the above [a vile mixture of snails, earth-worms, common salt, hartshorn shavings, etc.], and that you would be taking them to-day yourself but for the introduction of homœopathy, which forced the old-school doctor to stir around and learn something of a rational nature about his business, you may honestly feel grateful that homœopathy survived the attempts of the allopathists to destroy it, even though you may never employ any physician but an allopathist while you live."

A WORD ON THE TREATMENT OF CHRONIC DISEASES.

THIS is the season when many newly-graduated physicians will begin their life-work.

The recent graduate will find medical practice somewhat different from what he has probably expected. Acute diseases and typical cases of disease will be rarer than his studies would have led him to suppose, while the incurable and the valetudinarian, who have worn out the patience of the family physician, will be likely to give the newcomer a trial. He will be almost certain for a time to have his powers taxed to the uttermost in the endeavor to help the chronically diseased. The hemiplegic and the ataxic, the neurasthenic, the cirrhotic, and the cardiac are likely to be his first patients.

Of course, it is trying to the young physician, in a strange place, to be obliged to start a reputation on his success in the treatment of cases in the nature of things incurable. Some of the patients who consult him he may decline to treat, and this, under some circumstances, would be the best thing for him to do. The patient may be an epileptic, to whom every known remedy has been administered in vain; or an alcoholic dyspeptic,—a victim of gastritis,—who will not give up the "ardent" for the sake of getting well; or an old syphilitic, who has been the rounds of the surgeons, and gets no better; or a consumptive, unable from poverty to obtain the food or even the medicine ordered, much less to seek the benefits of climatotherapy. It is hardly to be expected that the young practitioner, without even the backing of flush charitable societies, will assume the responsibility of prescribing the medical treatment and furnishing the necessary hygienic conditions for such a patient.

The victims of chronic diseases are generally great sufferers, and the materia medica is not lacking in really serviceable remedies, though these are fewer than the junior practitioner supposes, while hygienic therapeutics has undergone a preponderant development of late years. In the new analgesics, hypnotics, cardiac and respiratory stimulants, etc., the practitioner of to-day has resources which put him to advantage over his predecessors. In relieving pain and discomfort, then, the physician of to day, though he may not be able to cure, may markedly benefit. He may not have the power to remove a peccant cause, which keeps a part or organ permanently under morbid excitement, he may reduce to a minimum the pertu tion of the organism. He may not be to restore a morbidly altered stomach, bu may, by a judicious selection of prediges foods, keep the system nourished, though gastric glands secrete little pepsin. How by magic, the cardiac patient will someti find his dyspnœa and dropsical effusions ish under the proper use of digitalis and adjuvants!

A large part of a physician's duties is keep such patients comfortable and prol their lives. Dyspeptic ailments are alm certain to be greatly lessened, if they do for the time disappear, under a suitable mentary regimen and antiseptic lavages; sufferer from chronic diarrhœa may also tain notable mitigation of his troubles in d ing and antiseptic remedies. The patien Bright's disease may, by careful treatm directed to the three great emunctories,— skin, kidneys, and bowels,—and by a fort ing regimen, have a fair measure of health years, and the diabetic, by wise direction hygiene, and especially in diet, may be alm made to forget that he is a sick man. H teria has been the opprobrium and the spair of the physician, and yet the *début* i successful practice of many a young physic has been marked by the temporary triu over some inveterate case of this disease.

In all chronic diseases the physician look especially after the state of the digest organs,—above all things, says Hufeland, stomach,—and the whole system of digest should be sound and well formed. He sho see to it that the bowels are in proper ord and that the kidneys are eliminating properl should give directions as to the hygiene the person and of the sleeping-room; sho relieve pain and insomnia by medicame the least harmful, and insist on rigid att tion to diet and the proper exercise. He thus lighten the tasks of the suffering orga and give comfort and prolong life, if he ca not cure.

IS THERE ANY TRUTH IN THE ADAG "NATURAM MORBORUM OSTENDUNT CURATIONIS?"

IT is not easy to discover the author the old adage above given, which may translated as follows: "The remedy whi cures indicates the disease." If there we sure specifics for certain diseases, then, case where the disease was unknown, if

nce the specific remedy were given and patient got well, the nature of the disease ht be inferred. This would be easier still the particular remedy were known not to e a beneficial effect in other morbid conions. Unfortunately, there can hardly be d to be any medicaments whose curative ion is limited to one disease or to one s of diseases, so that, given the morbid plexus, and given restoration *ad integrum* ter the use of the medicine, one would be tified, from this fact alone, in affirming a gnosis.

Quinine comes as near to being a specific malarious diseases as any drug in the maia medica. Granting, now, that a severe e of migraine yields to a 15-grain dose of inine, are we warranted in asserting that migraine was malarial in its origin? ere is no such warrant, for other heades, certainly not malarial, have been ped by quinine. If, however, it were nd that the patient had been exposed to laria, and the headaches were periodical, beneficial effect of the quinine would tainly be one factor more towards a gnosis.

The same reasoning has been applied by a ent writer—Tison, in an article read before Soc. de Méd. Pratique, March 6, 1890—mercury and iodide of potassium. He ows, in fact, that the mere circumstance of tain diseases of an obscure and somewhat picious nature having yielded to the soled specific treatment furnishes an insuffient element to establish a diagnosis.

At the same time, it is right to assign some gnostic value to the fact that a disease hether it be a cerebral tumor, a phagedenic ceration, a cutaneous eruption) has got well der antisyphilitic treatment, especially if ng with this circumstance any of the commemorative signs exist.

Reports on Therapeutic Progress.

THE PHYSIOLOGICAL ACTION OF ANTIPYRIN.

At the meeting of the Johns Hopkins Hospital Medical Society, held January 20, 1890, Mr. Aug. Hoch read abstracts from a paper prepared by himself and Mr. Simon, entitled "Some Additions to the Knowledge of the Physiological Action of Antipyrin on the Nervous System."

While a great deal had been written about antipyrin from a clinical point of view, it was not until the winter of 1888–89 that the physiological action of the drug was thoroughly studied, and especially is this true concerning its action upon the nervous system. At that time the present work was begun upon suggestion of Professor H. C. Wood, and carried on at the physiological department of the Johns Hopkins University, Professor H. N. Martin kindly offering facilities and revising the work done. Within the last year several articles have appeared, treating the same subject in a similar way, and some of the facts established by the authors can, therefore, only be considered as confirmatory.

In the experiments different animals were used, such as the cat, the dog, the rabbit, the fowl, and the frog, and the fatal dose naturally varied considerably, being about gr. xxx in the cat, gr. xx to xxv in the rabbit, gr. x in the fowl, and the enormous dose of ʒiv to ʒviii in the dog, full-grown animals being used.

The symptoms produced in the various animals were in all cases quite similar, and a brief account of them, in the cat, for example, will not be out of place, before taking up the consideration of the drug's action upon the various nerves of the body, in which, of course, the main part of the work consisted.

After the administration of gr. xl to a full-grown cat, marked salivation and lachrymation occurred almost immediately, lasting, as a rule, for about a quarter of an hour, and sometimes longer. The animal showed marked signs of distress by constant crying, and continuous attempts to seek some dark corner for the purpose of hiding. The gait soon became ataxic, beginning in the hind legs, and increasing until, finally, maintenance of the normal position became impossible, and the animal fell on one side.

Soon after this, a new stage—the convulsive stage—began, during which spontaneous convulsions, as well as artificially produced ones, occurred. It was easy to produce spasms of the entire animal by a light blow upon the table, a flash of light, clapping of the hands, etc., and if such stimuli were repeated sufficiently often, a general convulsion resulted, characterized by great rigidity of all the muscles of the body, and followed by clonic movements of the limbs with trismus. The pupils were widely dilated, and soon became insensible to light.

Respiration was greatly hurried, as was also the action of the heart, though this to a much less degree. The animal died, as a

rule, during a convulsion, or from paralysis of the respiratory muscles. The heart continued to beat for as long as twenty minutes after respiration had ceased, and was finally arrested in diastole. All these symptoms occurred within an hour after administration of the dose.

In order to explain these symptoms, experiments were made upon the various nerves in the animals enumerated above.

To begin with the motor nerves, it was found that the action of the drug upon these was a paralyzing one, while the muscles retained their normal irritability. This was demonstrated on frogs' muscle nerve preparations, by allowing the drug to reach the muscle or the nerve only, when it was found that whenever the muscle had been placed in antipyrin, stimulation of the muscle only produced a contraction, while stimulation of the nerve was never followed by any response; if, on the other hand, the antipyrin was allowed to act only on the motor nerve, then stimulation of nerve and muscle both was followed by a normal contraction.

This, therefore, points to an action of the drug upon the intramuscular portions of the motor nerves, and possibly their end plates.

Although these experiments no longer belong to the most accurate methods of investigation, still the fact that alternate exposure of the intra- and extra-muscular portion of the nerve, for the same period of time, was followed by different results, speaks for their validity in the present case.

Again, if in an animal, after death from antipyrin, the sciatic was stimulated, and the nerve separated from the surrounding parts, so that the current could not readily reach the muscle along the moist parts below, then stimulation of the nerve was followed by no contraction, while the muscle itself readily responded upon irritation. The same was demonstrated in the case of the phrenic nerves.

There is also a time, late in the course of intoxication, when no movements of any kind can be elicited from the animal, the heart still acting, and artificial respiration having been kept up throughout the whole experiment, which we explain by paralysis of the motor nerves.

Upon the sensory nerves antipyrin was found to act as an anodyne, both when locally and internally administered. Clinically this effect has been known for a long time, and experimentally the same was noted. Thus, if, for example, a circle of Müller was mapped out upon the arm, and antipyrin was locally applied, then such an area was markably increased in size, and especiall a longitudinal direction.

Similarly, if the cuticle upon the arm removed, and a concentrated solution of drug rubbed in, the point of a scalpel c be plunged into the sore spot, causing a lutely no pain.

Control experiments with a saturated s tion of common salt certainly demonstrate decrease in sensibility, but not nearly marked as in the case of the antipyrin.

Moreover, it was found that at the be ning of the convulsive stage, the animal c be operated upon without the use of an an thetic.

We also have evidence that the other spe senses are paralyzed, and, before all oth the muscular sense.

Assuming that the ataxic phenomena tabes are primarily due to a decrease in sensibility of the muscular sense, and membering that the ataxia is one of the e liest symptoms in antipyrin-poisoning, in a mals as well as man, several reported ca showing this, the authors infer that the m cular sense is the first to become abolished it is also the last to return; for if an anim which has been given a dose, short of leth be left to itself, then the ataxia remains several days after all other effects have ready disappeared. The sense of sight is first abnormally excited, flashes of light bri ing on convulsions. This stage of hyp æsthesia, however, appears to be followed a stage of total anæsthesia, the sense of tou and hearing being probably affected in t same way.

Upon the brain the drug acts as an i citant, the convulsions witnessed being d to a direct action on the brain, and probab on the motor cortex. That they are n spinal in origin can be shown by section the cord, when they only occur in the parts which remain in connection with t higher centres.

They are not asphyxial, for if artificial r piration be started before the drug is admi tered, or after, they appear nevertheless.

Section of the brain, however, the c passing through the crura cerebri, will pr vent the appearance of convulsions of a kind.

With reference to the convulsions produc by the drug, it should also be stated that th cerebral excitement was considerably le sened after the administration of ether; th is, if the animal be kept under the influ

ether for some time, then during the time r its withdrawal it was occasionally impos- le to cause any convulsions during the re- ader of the experiment, spasmodic con- tion being the result.

s to the reflex action on the spinal cord, re was found first an increase, followed r on by a decrease. This was shown on frog, and observed in the animals during different experiments.

In some of the experiments on the action the drug upon the brain, where the crura ebri were cut, the temperature rose rapidly most extraordinary manner. Thus, in a in which the cut passed through the pos- nor portion of the crura, the temperature found to be 110° Fahrenheit in the rec- , and 112° were recorded in the abdominal ity some time after death. Usually, how- r, a temperature of 105° to 106° was noted er such circumstances.

This fact is of interest in many respects, ecially in connection with a consideration the well-known antipyretic action of the g.

In the normal animal, antipyrin does not er the bodily temperature, even if given oxic doses, while this certainly does occur, marked extent, in the presence of fever. the above cases high fever was observed, antipyrin had been administered in e a large dose ; why then did it not affect temperature ?

Certainly a probable action of the drug on the thermal centres directly offers itself a ready answer to the question ; the ther- l centres being thrown out of action in e above cases, it could no longer exert its luence upon the tissues through the ther- l nerves.

We certainly have reason to believe that at-production or heat-regulation, or both, e under the control of a cerebral centre or ntres.

In all cases of fever, in which the body mperature is lowered by the drug, the fol- wing is the probable action : The abnormal nstituents of the blood, whether they be oducts formed by the action of bacteria, or therwise, or reflex causes, having their origin an abnormal condition of the nerves lead- g to the thermal centres, act upon the lat- r, stimulating them, if they are heat pro- ucing, paralyzing, or, at least, lessening eir irritability if heat regulating, or both, if oth exist. Antipyrin, on the other hand, administered under such circumstances, nd effecting a reduction in the temperature, must act exactly in an opposite manner, to result in a lowering of the temperature.

At the same time nitrogenous waste is decreased (as Samadowsky showed) by antipyrin in the normal, as well as in the feverish, animal ; but that this decrease of waste is not due to an action of the drug upon the thermal centres, but upon the tissues themselves, is apparent from the fact that the temperature of the normal animal is not affected by it, however large the dose might be. This, then, explains the reason why antipyrin is such a powerful antipyretic, since it acts on both the thermal centres and the tissues.

As we saw in the description of antipyrin-poisoning, the number of respirations is increased, so that—*e.g.*, in one cat, poisoned with gr. xl of the drug—this amounted to 160 respirations per minute, and eight minutes later to 204 ; in another animal 250 respirations were recorded after the administration of a lethal dose. Later on this number decreased, not falling below the normal, however, until shortly before death.

In order to determine the cause of this extraordinary increase, we had to differentiate between an action of the drug upon the respiratory centre and an action upon the vagus, the discharger of respiration, as Markwald calls it. Section of the vagi did not prevent this increase, in fact, influenced it in no way, and a direct action upon the respiratory centre, therefore, suggested itself as the primary cause, for other possible secondary causes, such as an increase in temperature or an increased venosity of the blood, could readily be excluded by experiment. In the experiments also in which the crura cerebri were divided, a similar increase in frequency was observed. The decrease in the number of respirations following must be due to overstimulation of the centre, and the associated exhaustion, the vagi retaining their irritability up to the last, which could readily be shown by faradic stimulation, giving rise to the characteristic respiratory spasms. Towards the end, finally, respiration became quite spasmodic, and active expirations occurred. In this the increasing paralysis of the motor nerves must have co-operated with the exhausted condition of the respiratory centre. It may be of interest to state in this connection that in a reported case of antipyrin-poisoning in man, Cheyne-Stokes's breathing was observed, and in the case of some of our animals its homologue—viz., periodic respiration—was noted.

As to the effects of antipyrin upon the ci-

culatory apparatus, it was found that the blood-pressure is practically unaffected by the drug, a slight decrease in pressure only being noted towards the end.

The strength of the beats is somewhat lowered and their number increased, amounting to about twenty to forty per minute. A section of the vagi influenced this increase in the number of beats but very slightly, and the result thus seems to be due to an action upon the accelerator nerves.

In all the authors' experiments the heart was arrested in diastole, unless the upper brain-tracts were previously destroyed, when arrest in systole invariably occurred.

The styptic action of the drug is most marked, and has been ascribed by some to an action of the drug upon the vaso-motor system. While this may be the case, it is certainly only a partial cause, since the antipyrin influences the clotting power of the drug in a most remarkable manner; thus, in one case, when 50 c.c. of blood were allowed to flow into an aqueous solution of antipyrin (gr. x in 10 c.c.), a clot had formed one minute later already of such strength that the entire beaker could almost be inverted.

SODIUM SILICOFLUORIDE AS AN ANTISEPTIC.

For some years the hope has been entertained that in antiseptics would be found the means of combating infectious diseases, a view which has a certain amount of support in the observation of Dr. Cash, who found that when corrosive sublimate was given to guinea-pigs it would afford protection from anthrax, the animals under certain conditions living quite unaffected by the inoculation. The extremely poisonous nature of the antiseptic is, however, a great danger in itself, and naturally a less dangerous substance is a great desideratum. Such a substance is, perhaps, to be found in sodium silicofluoride, a compound which has already been brought before the readers of the GAZETTE by Dr. C. Berens (THERAPEUTIC GAZETTE, 1888, page 443). In the *British Medical Journal* for February 15, 1890, MR. F. JESSOPP BOKENHAM publishes an account of a number of experiments which he made with this agent.

His experiments serve to prove that in the solution of 1 to 750 sodium silicofluoride will entirely prevent alcoholic fermentation; that solutions of 1 to 900 and 1 to 1050 will delay fermentation for a time; but that these latter solutions cannot be considered truly antis tic, as the growth of the yeast was only layed. Similar experiments made with 3000 and 1 to 2000 with nutrient gela have shown that this proportion is with effect on the growth of the bacillus anthra and that there is no diminution in the vi lence of bacilli cultivated through seve generations on this pabulum.

As it has been claimed that sodium sili fluoride is usually harmless when given int nally, Mr. Bokenham next made a series prolonged experiments, administering drug hypodermically to guinea-pigs.

The injection of about a drachm of a s enty-five per cent. solution into the periton cavity of a guinea-pig rapidly produced sig of extreme collapse, the abdomen beca rigid, legs extended, and the temperat rapidly fell from 38° C. to 26.5° C. The a mal was killed, and marked signs of perito tis were found, although no injury could found attributable to the puncture of syringe. ½ grain, in a warm saturated lution, was then injected into a second guin pig weighing ten ounces by an œsophag tube. Great uneasiness was noticed after injection. The abdomen became much d tended, and death resulted in fifty-five mi utes. On post-mortem examination, stomach was found much dilated, with v sels injected, no signs of injury by the tu full of pulpy food, with much thick muc and gas. Intestines contained similar muc Heart arrested in diastole. Other orga were normal. In all the experiments, wh the drug was given, it rapidly produced se ous effects, although after the administrati of ⅛ of a grain in one dose the respirati became slow and labored, and the temper ture fell to 33° C., with symptoms of c lapse, in which the animal died. These e periments certainly prove that the statemen made as to the harmless nature of this dr are erroneous.

Mr. Bokenham then tested the effects the drug on himself, after a mixed me taking ⅛ of a grain of the solid salt. N effect was noted for an hour, but about th time a feeling of great nausea with eructa tions came on. This lasted several hour The pulse was also at the same time great slowed, tension being reduced. The followi day the symptoms passed off. Similar effec were produced on three other individual medical students, after the administration the same dose. Mr. Bokenham's resul therefore, certainly seem to show that

is not a safe internal remedy, and physi-
s should hesitate before they advise its
rnal administration. His results, how-
r, have proved the value of its results as
ntiseptic.

CRYSTALLINE DIGITALIN.

Crystalline digitalin, according to M. AR-
UD (*Répertoire de Pharmacie*, January 10,
o), bears the greatest analogy to tan-
nine, which has been extracted from the
ghin of Madagascar. Both are free from
ogen, both are insoluble in water, soluble
l preparations in chloroform, and very
ble in boiling alcohol. Neither is a glu-
de, since neither of them yield glucose or
other sugar, whether reducing sugar or
from the action of dilute boiling acids.
form resins under these conditions,
when not exposed to the air, without
appreciable formation of any soluble
ndary product. Arnaud also claims that
e is considerable similitude between these
tances as regards their physiological ac-
, and, further, they are both accompanied
e first substances which furnish them by
non-crystallizable glucosides, equally en-
ed with great activity on the organism,
both capable, in certain cases, of more
less completely replacing the crystalliza-
bodies. Although Arnaud proposes to
further prosecute his studies on these
tances, he at present feels himself war-
ed in stating that tannin and crystalline
talin are true anhydrides, capable of
ergoing hydration under certain condi-
s, and thus resulting in the formation of
ds. Schmiedeberg has thrown much light
the complex question of the proximate
nciples of digitalin, but Arnaud main-
ns that he is wrong in regarding crys-
line digitalin, prepared according to the
cess of Nativelle, as a mixture of several
lies. This statement he maintains is only
e in the case of insufficiently purified
ducts, and if the crystals of digitalin be
mined it will be found not to contain
re than two to seven per cent. of foreign
tter, and by successive solution and crys-
lization it may be obtained in a state of
olute purity. Arnaud thus claims that
ystallized digitalin is a perfectly definite
emical compound. This statement he
oves by treating a certain quantity of the
ystallized digitalin with cold absolute al-
ohol in successive amounts until the sub-
stance is completely dissolved. After evaporating the liquids collected by six different washings, he states that all the residues have the same point of fusion,—243° to 245°,—while further the weight of the residues remains equal, thus proving that all the residue substances possess the same solubility. Successive washings with boiling benzine likewise give the same result, a fact which Arnaud especially calls attention to in view of the statement of Schmiedeberg that the crystalline digitalin is insoluble in this vehicle. Finally, Arnaud states in *résumé* that crystalline digitalin is a true chemical compound, and that it is wrong to designate it under the name of "digitoxin," as certain chemists have proposed.

TREATMENT OF ENDOMETRITIS BY CURETTING.

At a recent meeting of the Surgical Society of Paris, the subject of the treatment of endometritis by curetting was up for discussion.

M. BOUILLY read a paper, of which the following is a summary:

In eighty-one cases of endometritis he had performed the operation of curetting; sixty-nine of these cases had been watched and the results noted. Only simple endometritis had been treated, or cases complicated with slight inflammation of the uterine appendages; he had not regarded the method applicable to cases where the endometritis was complicated with laceration of the neck, with ectropion, or with uterine fibromata. The operation was not generally performed till after other kinds of treatment had been exhausted.

The symptoms presented by the patients treated were the following: 1, metrorrhagia, whether occurring during the menstrual period or independent of menstruation; 2, mucous or muco-purulent discharges more or less abundant; 3, various pains, some of which were attributable to a slight inflammation of the annexes. Pain alone has never, in his practice, constituted an indication for curetting.

The operation is always performed after anæsthesia by chloroform; it is then far easier, and the patient is spared much pain. The cervix is always previously dilated with laminaria tents made aseptic by iodoform. The first day a small tent is inserted; the next day a larger one, and the operation has always been easy on the third day. Bouilly much prefers slow to sudden, violent dilatation, and would not use the metallic dilators.

He always has recourse to antiseptic precautions; employs a Sims or Simon curette; performs the curetting with some force, so as to scrape away the entire uterine mucous membrane; the *débris* is removed by means of a swab. He terminates the operation by an injection of glycerite of creosote—1 part of creosote to 2 of glycerin—in mucous endometritis; in the hemorrhagic form he employs chloride of zinc, 1 to 10.

The consecutive treatment is of great importance. Bouilly thinks that failures are often due to septic infection, owing to want of sufficient care to keep the cavity of the womb aseptic.

The operation, as thus performed, has never been followed by complications. Four times only has he noted the first few days a slight tenderness on one or both sides of the uterus; oftener the pains rapidly disappear after the operation.

The results which he has obtained are as follows: Of the sixty-nine cases, thirty-nine got well; nineteen of these were hemorrhagic and twenty were mucous endometritis. There was one case of caseous endometritis, similar to caseous coryza, and giving rise to a very fetid discharge. In fifteen of the sixty-nine cases there was improvement, and in fifteen the treatment failed. The results were especially satisfactory in the hemorrhagic forms; still, in some cases, he has seen slight lesions of the annexes remain unaffected by curetting, while the condition of the endometrium was improved.

Of the fifteen unsuccessful cases, there were lesions of the annexes in three; persistence of hemorrhages was noted in four; persistence of muco-purulent discharges in nine patients.

The causes of failure seemed to him to be: 1, faulty operation (insufficient curetting); 2, rapid reinfection of the mucosa; 3, the existence of a form of glandular endometritis of the cervix, with viscous catarrhal secretion, very adherent and very abundant, the lesion being, in fact, at the bottom of the glandular culs-de-sac of the cervix, easily escapes the action of the curette; 4, generally want of success is due to lesions of the annexes,—in three of Bouilly's cases there was suppurative salpingitis, and in one cystic sclerosis of the ovary. In two cases, he thinks, there was submucous fibromata.

M. TERRILLON said that he had often, since 1885, performed "curettage" of the uterus, and he had been pleased with the results. Like M. Bouilly, he insists on the necessity of slow dilatation with laminaria tents. He employs for dressing iodoform gauze; with th the uterus is tamponed after the operatio He has found curetting especially beneficial hemorrhagic endometritis. He has seve times witnessed the rapid reinfection of whi M. Bouilly had spoken. He believed th want of pains in disinfecting the syrin canula used for making the injections w often responsible for the septic accide occurring.

He has in a dozen instances curetted in e dometritis complicated with lesion of the ut ine appendages. He has never witnessed a good result in such cases, particularly wh the salpingitis manifested itself by hemorrha The appendages must first be removed; th curetting will cure the endometritis.

M. TERRIER spoke favorably of curettin for endometritis. He practised dilatation wi sea-tangle tents for three or four days; the finally, used large sponge tents for a couple days. Hypertrophied and deviated uteri r quire great dilatation in order to be we curetted. The choice of curette is not much importance; what is important is make a very thorough scraping of the cervic cavity and the borders of the orifice. Aft curetting, he cauterizes the endometrium wi zinc chloride, 1 to 10, and he often inser a drainage-tube into the cavity of the wom to facilitate the flow of liquids. He is mu in the habit of packing the uterine cavi after the operation with iodoform gauze, an leaving in the pledgets four or five days; the they are removed bit by bit, and antiseptic in jections are practised; he recommends syring with glass canulas instead of rubber; the must be kept perfectly aseptic. Like the su geons who had preceded him, he had nev had failures, except when there was lesion the annexes.

THE TREATMENT OF CYSTITIS IN TH MALE.

In a paper read before the Louisville Su gical Society in March, 1890, DR. DAVID Y YANDELL discussed the treatment of cystit in the male, calling attention to the fact em phasized by Keyes that the treatment of th condition is based upon the use of alkalie anodynes, and the preservation of the prop attitude, or, in other words, rest in bed, wi elevation of the pelvis, alkaline diluent and anodynes to the point of relieving pai and tenesmus (*American Practitioner News*, March 29, 1890).

These agents may be assisted by general inter-irritation over the hypogastric region, with heat there and to the perineum, mild laxatives, demulcents, diuretics, certain infusions and decoctions, and full hot baths. In gonorrhœal cystitis Dr. Yandell especially relies on the use of nitrate of silver carried every few days, till relief is obtained, to the membranous urethra with a suitable syringe, 1 grains to 1 ounce being the strength of the preparation. In gonorrhœal cystitis the writer advises the suspension of all usual specific remedies in such cases, notably cubebs, oil of sandal-wood, and copaiba, though he recommends fluid extract of pichi in large and often-repeated doses, as reliable and usually efficacious.

Diet is of great importance. Salt meats, condiments, black coffee, cheese, and acidulated drinks, unless made effervescing with the carbonates, should be forbidden.

The rectum should be studiously kept empty. In bad cases, large enemata of warm water frequently thrown into the gut are an exceeding comfort. Opium is usually necessary, and in whatever form given it should preferably be lodged in the rectum.

In the subacute stage of the affection pichi is especially useful, and its efficacy is increased by the liberal use of the Silurian Waukesha water, especially when charged with carbonic acid gas. In extreme rebellious cases Dr. Yandell has seen improvement follow large and repeated doses of powdered Venice turpentine rubbed into pill with magnesia.

Chronic cystitis may occur in two forms. In one there is but a slight increase of the natural mucus of the bladder mixed with the urine. Here the inflamed mucous membrane becomes quickly intolerant of the pressure of water, and drives the bladder to expel it at frequent intervals. Here rest in bed, alkaloids, and anodynes, supplemented by pichi and Silurian water, in the majority of cases produce permanent cure. In chronic cystitis, the more severe form, consisting of what is generally called vesical catarrh, if the cause can be recognized and removed, cure will rapidly be accomplished, provided the disease has not continued for such a length of time as to produce permanent structural changes in the bladder-walls; in the latter case we are confined to palliative treatment, the operation for suprapubic fistula being here the most efficacious procedure. This Dr. Yandell believes is often too long delayed, and he maintains that it is better to do this early than late.

In vesical catarrh, due to causes which cannot be overcome, the first thing to do is to empty the bladder by a catheter once or more a day, with the gentlest possible hand. Where this can be thoroughly done, the most important advance towards relief has been made. It unfortunately happens, however, that the contents of every bladder cannot be completely removed with the catheter. For various causes a portion of the urine remains; this and the mucus undergo chemical change, decompose, become stale, acrid, irritating, and intensify by their presence the already existing evils.

In this condition of things it becomes necessary to supplement catheterism by washing out the bladder. How often should the patient be catheterized? The best answer is furnished by the bladder itself. Whenever this organ becomes sufficiently distended to produce pain, empty it. If the patient can do this unaided, so much the better; but be sure the evacuation is complete, for the urethra had better be subjected to the irritation of an instrument than the bladder subjected to the irritation of residual urine. Soft instruments are better than hard. Water containing a small quantity of salt or chlorate of potassium is a more agreeable injection to the patient than simple water. But equally agreeable and of positive curative value are injections containing boracic acid Whatever be the injection, its temperature when it reaches the bladder should be not less than 100° F. Allowance should be made for the water to cool as it passes through the instruments, and it had better, therefore, be started from the vessel at a temperature of 105° to 110°. The ordinary fountain syringe is as good an instrument as any for making injections. Few bladders will receive at first without pain more than an ounce or two of water. A sense of vesical uneasiness should be the guide as to the amount of water introduced. Positive pain should not be inflicted. The water, after remaining in the bladder for a few moments, should be allowed to run out. It will bring with it at first whatever substance is mixed with the urine,—always mucus,—sometimes pus and mucus. The injection should be repeated until the water runs away clear. After a time there will either be an improvement in the bladder itself, or it will have grown accustomed to injections, when larger quantities of water, and often of much higher temperature, may

be introduced. Injections of gradually increasing size are indispensable to the cure of these cases. Without being used in this way they cannot do their full work. The fluid must be made to reach every nook and corner of the pouches which are so often present in cases of long standing, and without the thorough cleansing of which no progress can be made towards cure, and not much even in the way of comfort.

Injections are medicated with many different substances. When the urine is alkaline and depositing phosphates, half a grain to a grain of acetate of lead to the ounce of water is strikingly valuable. A very soothing injection will be found in the biborate of sodium, 15 grains dissolved in half an ounce each of glycerin and water. A few drops of dilute nitric acid to the ounce of water may be used with benefit where the urine is heavily charged with the phosphates. Nitrate of silver in even so small quantities as a quarter of a grain to the ounce, which is often recommended, will at times cause great suffering.

As an all-round substance for injection, none compares to boric acid in every variety of cystitis in which injections are called for. It seems to fulfil every indication. It lessens the phosphates as well as lead or nitric acid. It changes the odor better than carbolic acid, and when given in full doses internally at the same time it has appeared to accomplish all that can be done towards changing, correcting, and sweetening the urine. To get these results, however, the system must be saturated with it, and the bladder fully distended with it in saturated solution. Short of this it will be found necessary to supplement it by some one of its companions named.

Among internal remedies the salicylates and the benzoates embrace perhaps the best. Tonics are useful in all, and essential in many, cases. Warmth, as obtained by climate, by clothing, and by other means, is scarcely second in importance. Many a man with chronic cystitis has been able to secure comfort by spending his winters in the South, and many cases have escaped exacerbations at home by avoiding all exposure to cold.

Catheterization done properly and sufficiently often, irrigation done properly and sufficiently often, with a saturated solution of boric acid introduced as hot as it can be borne, and gradually carried to the point of full distention of the bladder, constitutes the best local treatment for all the ordinary forms of vesical catarrh.

COMBINATION OF CHLORAL AND ANTIPYRIN.

Some time ago we alluded to the fact that it was impossible to produce a mixture of antipyrin and chloral hydrate in the form of powders, for when these two substances are brought in contact with each other an oily fluid results. The production of the fluid on mixing chloral with antipyrin is in itself not especially surprising, since numerous other substances, such as sodium salicylate, sodium acetate, etc., when combined with the crystals of chloral, likewise lead to the production of a fluid.

In the *Pharmaceutische Post*, February 2, 1890, DR. LUDWIG REUTER writes that, after mixing equal parts of antipyrin and chloral together, and placing the mixture away for some time, he found that numerous crystals had developed in what was at first a clear oily liquid. These crystals were but slightly soluble in cold alcohol, ether, or chloroform, but were somewhat more soluble in boiling alcohol or boiling water. They were perfectly odorless and perfectly tasteless. With caustic soda there was no separation of chloroform, and with ferric chloride only a slight yellow color was produced, by no means characteristic of the red antipyrin reaction which should have been obtained.

On heating the crystals with caustic soda there was at first traces of chloroform developed, and then isonitril with the separation of pure antipyrin, and the fluid when now acidulated gave an intense red color with ferric chloride. It would, therefore, seem that from this mixture of chloral and antipyrin a new compound has been developed.

This substance, however, appears to possess no marked therapeutic action, and when given to rabbits no effect either characteristic of chloral or antipyrin can be recognized. It is, therefore, worthy of mention that the administration of chloral and antipyrin together serve to antagonize each other. The name of the compound is trichloraldehyd phenyldimethylpyrazolon.

THE TREATMENT OF GONORRHŒA BY SALOL.

In the *Lancet* for March 22, 1890, MR. J. ERNEST LANE writes that for some time past he has been prescribing salol in the out-patient department of the London Lock Hos-

pal, and has now tested its value in urethral discharges at all stages, in some cases relying solely on its use and in others employing an astringent injection in addition. An analysis of fifty cases in which he used this drug shows that six were cured, twenty-four showed considerable improvement, and fifteen no change whatever, while in five cases the symptoms were aggravated. The doses ranged from 5 to 30 grains daily, the beneficial effects often present manifesting themselves in a very short time. When improvement takes place the symptoms show abatement in from two to seven days; in acute cases the painful micturition is alleviated early; in cases of more chronic nature, the discharge is materially lessened in this time. The author employed an injection in ten cases in conjunction with salol, the drug then being given in 5-grain doses. Subsequently Mr. Lane increased the dose to 10, 20, and, in some cases, 30 grains, and relied upon its internal administration without the assistance of injections. Out of forty cases so treated, an improvement was noticed in twenty within a week, while six were completely cured. Salol is not a mechanical mixture of carbolic and salicylic acids, but appears to be a compound of the nature of an ethereal salt, since phenol can, with some slight difficulty, be obtained from it on saponification. The potassium salt left after the treatment of salol with caustic potash gives with hydrochloric acid an acid which is either salicylic or one of its isomers. Four hours after administration by the mouth of 20 grains of salol, traces of carbolic and distinct evidences of salicylic acids, combined with other elements, were found in the urine. In one case the urine was blackened as in carboluria, the patient at that time taking 30 grains three times a day. The effect of salol is apparently produced by the action of the urine upon the inflamed urethra, since that fluid contains salicylates and sulphocarbolates. It may be given in doses of from 10 to 20 grains three times a day at any stage of the disease, and in chronic cases an astringent injection will materially hasten the cure. The effect does not appear to be enhanced by larger doses than 20 grains. When the amount was increased to 30 grains, the urine became blackened, and the symptoms did not show any proportionate improvement. The author commenced his experiments by giving 5-grain doses, and in all probability his tables would have been much more favorable had he administered the drug with a freer hand.

THE PRODUCTION OF ACUTE ŒDEMA OF THE GLOTTIS FROM THE ADMINISTRATION OF IODIDE OF POTASSIUM.

Although the use of iodide of potassium is known frequently to entail unpleasant consequences, yet the most dangerous of all, the production of œdema of the glottis, seems to have attracted little attention. In the *Therapeutische Monatshefte* for March, 1890, DR. A. GROENOUW has collected nine different cases, two of which occurred in his own practice, which illustrate the fact that in certain rare cases the internal use of potassium iodide may suddenly produce such intense œdema of the glottis as to render the instant performance of tracheotomy necessary, and in certain cases the œdema is so severe as to produce rapid death, although in some cases the œdema may disappear as rapidly as it occurred, and so lead to the disappearance of all symptoms of dyspnœa. Examination with the laryngoscope, or, in fatal cases, post-mortem examination, after operation, will show beyond doubt that the cause of dyspnœa is this œdema of the glottis. The cases further show that this accident does not require for its production that the drug have been already given for a long time, or that it should have been administered accidentally in large doses; on the contrary, the symptoms of suffocation have ordinarily occurred within the first day after the administration of this drug, perhaps after extremely small doses, and perhaps within an hour or two of the first dose.

The following table illustrates the time of occurrence and the quantity of the drug given before the œdema appeared:

ŒDEMA OF THE GLOTTIS OCCURRED.

Case.	On the day.	After use of.
6	1	3 grains.
2	1	7½ grains.
7	1	7½ grains.
8	1	15 grains.
4	2	30 grains.
9	2	30 grains.
5	2	56 grains.
1	6	195 grains.

Thus it is seen that this accident occurred after unusually small doses had been given and early after the administration of the drug. In the last case in the table, where the œdema occurred six days after the commencement of treatment, a case which occurred in the practice of Dr. Groenouw, on the second day of the use of the iodide of potassium pain in the larynx and throat was com-

plained of. Further, it would appear that where the action of the iodide of potassium is localized in the larynx other symptoms of iodism are usually absent. The author attributes this action to the iodine of the compound and not to the potassium, and maintains further that its occurrence by no means shows an impurity of the salt, for only one patient was attacked with œdema, and no bad effect was noted in a patient who had been treated for many months with precisely the same preparation.

It is not tenable to suppose that in these cases there was some special local lesion from which the larynx was predisposed to œdema. In no one of these cases was there a heart lesion or an affection of the kidney. Further, age and sex appear to be without influence, so that after all we cannot go further than attribute it to some special idiosyncrasy to iodine, and yet even in three patients the use of the salt was persisted in after the occurrence of the œdema, with no unfavorable after-effects, so that it, therefore, appears that the iodism is not a permanent one.

Of course the important point to be noticed in these cases is the fact, which should always be remembered, that even in the commencement of the administration of potassium iodide acute œdema of the glottis may suddenly occur, which, if unrelieved, will produce death within a few minutes; and that the longer the use of the potassium iodide is persisted in the less this danger, so that if a patient has taken 50 to 60 or 100 grains without unfavorable effects, the danger from œdema of the glottis has been minimized.

SALICYLATE OF SODIUM AS A CHOLAGOGUE.

According to the Vienna correspondent of the *British Medical Journal* for April 5, 1890, PROFESSOR STILLER, of Buda-Pesth, has used salicylate of sodium as a cholagogue for five years, and has found it better than any other drug in rapidity and certainty of effect. He gives the following illustrative case, which is one out of many: A man, aged 50, had suffered for about four months almost daily from severe bilious colic, and had been jaundiced for about three months. Rigors, with a temperature of 40° C., frequently occurred. He was so emaciated that his appearance suggested cancerous cachexia. The liver was enlarged and resistant, but smooth. The gall-bladder could not be felt. After a week's treatment with salicylate of sodium, the pa and fever disappeared, the icteric color creased, vomiting ceased, and, after a f weeks' stay in the hospital, he was dismi cured. The details of the mode of treatm are as follows: ½ gramme of the salicy was given four times a day. It was give half a glass of soda-water, or any other a line-water,—never in wafers, as these creased the gastric irritation. Usually gramme of the extract of belladonna added to each dose, as a non-constipati anodyne. Linseed poultices were appli over the liver. The patient was kept moderate diet for several days, and alkalin water, free from iron, was given as a beve age. Occasional pains were relieved by i jections of morphine. Carlsbad and Vic water was ordered by way of after-treatme The cholagogue properties of the drug h also been proved by experiments on anima In cases of pleurisy, Professor Stiller h noted a very striking diminution of the eff sion when salicylate of sodium was give Absorption occurred in a surprisingly rap way, and Dr. Stiller recommended the dru even for diagnostic purposes, as excludi the purulent character of the exudatio From 3 to 4 grammes in solution were a ministered daily, a spoonful being giv every hour or two hours. The prima effect, no doubt, was on the kidney and t increased secretion of urine favored absor tion. It was only recently that he had o served, in a case under his care, that t quantity of urine was increased from 650 t 2000 and even 2300 cubic centimetres und the influence of salicylate of sodium. Th drug was also useful in sciatica.

IODINE AS A REMEDY FOR VOMITIN

M. DARTHIER (*L'Union Médicale*, Decem ber 10) bears testimony to the value of tin ture of iodine administered internally for th relief of vomiting, a remedy recommende by the late Professor Lasègue in the vomitin of pregnancy. The author had observed i use in nineteen cases, eleven of which wer tubercular subjects, and found that it is c more value in the vomiting of early phthisi than in that of the later stages of this disease At the same time he gives instances of ad vanced cases with obstinate vomiting wher the symptom was largely controlled by th drug. Among other cases he gives one bronchial dilatation (subsequently fatal fr

acute tuberculosis) in a female, who for three weeks had regularly vomited after every meal. From the date of commencement of the use of the drug she ceased to vomit, and after a week's treatment, which was not productive of any signs of iodism, was completely cured of the symptom. Apart from phthisical vomiting, M. Darthier finds it useful in alcoholic gastritis, in ulcer of the stomach, and in the vomiting of pregnancy and of chlorosis, instances of which are recorded. He says that the majority of the patients take the iodine with pleasure; it often produces an agreeable sense of warmth in the stomach, lasting from five to twenty minutes. The dose is ten drops, dissolved in one hundred and twenty-five grammes of water, taken in three portions immediately after meals. In a certain number of cases, symptoms of iodism are produced, chiefly coryza; but a good many patients do not experience any such inconvenience from it.—*Lancet*, January 18, 1890.

THE ACTION OF CAFFEINE.

At the meeting of the Academie de Médecine, held March 11, 1890, M. GERMAIN SÉE reported the results of a series of studies which he had recently completed with M. Lapicque, as to the action of caffeine on the motor and respiratory functions in a normal state and in a state of inanition (*La Tribune Médicale*, March 13, 1890).

We have for a long time been familiar with the accounts of various travellers as to the surprisingly stimulating properties of different vegetable products which primitive peoples employ to assist in the accomplishment of severe work in the absence of proper amounts of food. Such substances are instanced in coca, of mata, and guarano, employed in South America, the kola nut in Africa, and tea and coffee in Asia. We have naturally sought to profit by and utilize the valuable properties of these natural products, and tea and coffee are now universally used throughout the entire civilized world as mental stimulants, and more recently for the power which they are stated to possess of facilitating muscular work. It is, however, remarkable that in nearly all these substances, excepting of course coca, that chemical analysis has revealed the presence of caffeine. It would thus seem that the physiological properties of this alkaloid would give the explanation of these marvellous properties; but, although caffeine has been subjected to the most exhaustive study, the conclusions of different investigators as to its action are not concordant. According to some the special action of this alkaloid is directed to the muscles. According to others it acts exclusively on the nervous system. Naturally, that the properties of this drug may be utilized, a positive acquaintance with its properties and mode of action is absolutely essential. Only a short time ago Professor Heckel experimented with caffeine in enabling soldiers to sustain a long march without fatigue, and he found that it facilitated muscular work, reduced fatigue, and rendered a considerable decrease in the amount of food possible.

Professor Sée believes that caffeine owes this property to its power of increasing the activity of the motor nervous system, both of the medulla and cerebrum. As a consequence of this double action he would find the freedom from fatigue. Further, he claims that caffeine prevents loss of breath and palpitation as a consequence of severe muscular effort, and he states that, from experiments made on thirty healthy individuals, in nearly all cases running did not modify the respiratory rhythm provided caffeine had been administered, while the same individuals running the same distance at the same rate of speed suffered from loss of breath, and the number of respiratory movements was tripled. Caffeine would thus seem to place an individual untrained into the position of one who had been subjected to perfect physical training. Professor Sée concludes his paper with the following *résumé:*

1. Caffeine, in small repeated doses, when given to soldiers on the march, facilitates muscular work not by directly increasing the activity of the muscle itself, but by acting on the cerebro and cerebro-spinal system. The consequence of this double action is the diminution of the sensation of effort and the prevention of the feeling of fatigue.

2. Caffeine prevents shortness of breath and palpitation, as a consequence of severe effort.

3. Under its use individuals subjected to prolonged violent exertion acquire the characteristics of persons in perfect physical training.

4. In producing this excitation of the cerebro-spinal motor system, on which depends the increase of muscular tonicity, caffeine increases the loss of carbon by the organism, but it does not restrain the loss of nitro-

gen. It does not thus in reality save tissue waste.

5. A means of preventing tissue waste, and so preventing the effects of inanition from fasting, is absolutely impossible of realization, since such a state of affairs could only be attained by absolute inaction or immobility, a state of affairs which it is hardly necessary to state cannot exist. With caffeine, then, the direct opposite ensues,—that is, although there is intense work rendered possible, it is only obtained at the expense of the organism. The animal machine can only operate at the expense of tissue combustion, and it is precisely in facilitating this combustion that caffeine enables muscular work even during fasting.

6. Caffeine has thus not the property of replacing foods, but only replaces the tonic general excitation which the general ingestion of foods produces. If one could assume that it was the direct immediate instantaneous action of foods which stimulated the stomach and the nervous system, and that their alimentary value does not extend beyond this, they could be substituted by stimulants.

Finally, Professor Sée maintains that the action of caffeine on the heart and blood-vessels is different from what is generally maintained, and is a much more active stimulant than is usually believed.

THE USE OF FLUORESCEIN AS A MEANS OF DIAGNOSING LESIONS OF THE CORNEA.

In November of last year Dr. Straub, a Netherland army surgeon, discovered the fact that a solution of fluorescein, when dropped upon any portion of the cornea which was deprived of its epithelium, would color this spot a deep green and leave the rest of the cornea unchanged. In the *Johns Hopkins Hospital Bulletin* for April, 1890, DR. RANDOLPH states that he has now performed over one hundred experiments in this connection in the eye clinics of the Johns Hopkins Hospital and the Presbyterian Eye and Ear Charity Hospital, which have led him to form positive conclusions. Fluorescein is a red powder, soluble in water, and belongs to that class of substances which are found as products of coal-tar distillation. Dr. Randolph employed a solution of ten grains of powder to the ounce of water, to which is added fifteen grains of the bicarbonate of sodium. Dr. Randolph states that although he has employed it in the most intense forms of corneal inflammation, it has never produced any irritating effect. The portions of the cornea stained retain the color from half an hour to several hours, while the solution does not produce the slightest effect upon the healthy cornea. Whenever there was an actual loss of substance, the coloration was more apparent, and it may, therefore, be concluded that as long as it is possible to color any portion of the cornea, we may be certain that some lesion still exists. Even in cases of slight excoriation, scarcely visible to even oblique illumination, every detail of the wound and every minute point, where the epithelium had been removed, is clearly brought out by a drop of the fluorescein solution. In ulcers of the cornea, positive results were always obtained. In simple superficial keratitis the coloration was much less distinct than when this disease was associated with an ulcer. In parenchymatous keratitis the results were invariably negative. In three cases of iritis, uncomplicated with corneal trouble, Dr. Randolph failed to obtain any coloration. In two other cases of iritis of syphilitic origin where the cornea was involved, superficially as well as interstitially, marked coloration was observed. In glaucoma the result was negative.

The use of this substance is especially valuable in determining the presence of minute ulcers of the cornea in very young children, where the blepharospasm and photophobia are frequently so intense that the lids have to be forced apart in order to get a view of the eyeball, and then the latter is rolled about so continuously and the cornea flits so rapidly before our eyes, that we are obliged to simply infer from the attendant symptoms the nature of the trouble without actually seeing the lesion itself; a drop of the solution will locate the disease and its extent, and bring it out distinctly, so that it can be seen no matter how fast the eyeball moves about. In foreign bodies in the cornea, no matter how small the foreign substance may be, its position and size can be located to a nicety. The coloration is here distinct, showing itself by a green ring just around the foreign body.

MASSAGE OF THE HEART.

Since the position of the heart is such that mechanical influences can only be exerted on it from without with the greatest difficulty, it occurred to PROFESSOR OERTEL that by increasing or diminishing the pressure which is caused in

a perfectly normal manner by the respiration on the heart, a mechanical action on the heart-muscle, and hence massage of the heart, might be produced (*Therapeutische Monatshefte*, No. 2, 1890).

From experiment, Oertel found that by jerking respiration,—that is, a respiration performed in two different ways, the second being the stronger,—the pressure exercised on the heart is increased, and when this is combined with climbing movements, and, at the same time, an increase in the depth of expiration, that dyspnœa is combated, and the pulsations of the heart may be stronger. These data were also experimentally confirmed by Heinricius and Kronecker, according to whom a direct contraction of air-pressure on the heart invariably influences its contractile power. The pressure of expiration, Oertel states, assisted by external mechanical pressure, the patient being directed to place his hands in the axillary line on a level with the fifth or sixth rib, and at the beginning of respiration to exert pressure in such a way that the hands press in an oblique line over the fifth or sixth rib at the point of greater curvature towards the xiphoid process. During this movement the pressure is steadily increased, until the maximum is reached at the end of expiration, by which time the hands have been pressed down over the fifth or sixth or eighth rib.

During inspiration both hands are taken away from sides of the chest. Oertel claims that through these processes massage of the heart was accomplished, that considerable influence is exerted upon respiration and circulation. The influence of the jerking expiration and pressure of the hands on expiration is evidenced in the greatly increased amount of air removed from the lungs in expiration. In addition to this increase in the amount of expired air, this method of expiration and external pressure increases the pressure on the heart's surface, and so produces a mechanical influence upon the heart. This statement is claimed to be a fact, and Oertel maintains that he has demonstrated its accuracy through a long series of sphygmographic curves produced on a young man in whom a part of the second, third, fourth, and fifth ribs had been resected. The results are stated to be as follows:

If the expiration is allowed to be exerted on every second or third systole at that time a great increase in the vigor of the heart's contraction made may be made out; during stronger pressure, the heart remains a long time in its maximum degree of systolic contraction, and, as a consequence, there is a larger pulse-wave in the artery produced. If, however, the pressure of expiration is allowed to act on the heart during several contractions of that organ, a continuous pressure on the heart-muscle is produced, which becomes considerably compressed, and there is marked reduction of the blood-pressure in the arterial system, with a double or triple pulse in the arteries, and a reduction in the pulsation of the diastole. In lengthened inspiration the diastole is increased, and, in consequence, there is a stronger degree of filling of the auricle and ventricle. As the vascular system is thus emptied, the work of both ventricles is considerably facilitated by the increase of the vigor of systole, and flow of blood into the coronary arteries is increased, and with the gradual increase of the pressure there is complete emptying of the venous blood and lymph out of the heart-muscle.

Oertel claims that this massage of the heart, especially the employment of slight pressure of short duration, is indicated in all states of weakening of the heart-muscle, in states of insufficient fulness of the arterial system or of venous stasis, in all cases where greater work is demanded of the heart as a consequence of heart-failures, and especially in acting as an assistant to the heart in mountain-climbing, etc.

It is contraindicated in endo- or pericarditis, in acute or subacute myocarditis as a consequence of sclerosis in the coronary arteries, and in sclerosis and atheroma of the arteries.

EFFECTS OF A VERY LARGE DOSE OF ACETANILIDE.

A number of cases have been recorded showing that even moderate doses of antifebrin or acetanilide may be followed by toxic symptoms, but no case has until now been reported in which nearly an ounce of this drug had been taken. It has generally been supposed that the toxic properties of acetanilide are due to the aniline of which it is manufactured, and it was, therefore, to be expected that the symptoms occurring in the two cases would be very similar. Dr. Hartge, of Dorpat, who has recently had ample opportunities of observing a case in which a student who had caught cold had dosed himself with 28 or 29 grammes of acetanilide, in addition to a considerable quantity of spirit, states that the symptoms only very partially corresponded with those mentioned by Dr. Dehio as due to poison-

ing by 154 grains of aniline, and which consisted in blue coloration of the skin and mucous membranes, profound coma lasting for several days, irregularity and quickening of the respiration, acceleration of the pulse, the smell of aniline in the breath, loss of power of motion, considerable disturbance of the sensory powers, followed by jaundice, with anæmia, albuminuria, and hæmoglobinuria. It is probable that this aniline was by no means chemically pure, but contained several other substances, especially toluidine, which is nearly always met with in the aniline used for commercial purposes, and in that employed by bacteriologists for staining tubercle bacilli. In Dr. Hartge's case, notwithstanding the enormous dose of acetanilide which had been taken, a quantity which requires five-sixths of an ounce of aniline to make it, or more than twice as much as Dr. Dehio's patient took, there was no loss of consciousness, of motion, or of sensation; no albuminuria or hæmoglobinuria, and only the slightest trace of jaundice; the blood-corpuscles, too, presented their normal appearance and character, there being no detritus or specks of pigment, though the color of the blood was changed to a dark blue, as in aniline poisoning; also the respiration was rendered rapid and irregular and the pulse accelerated. The patient complained greatly of inability to sleep, and the cardiac palpitation and dyspnœa produced a feeling as of impending death. No medical aid was sought for many hours after the drug had been taken. When Dr. Hartge saw the patient first, he was much struck by the marked blueness of the skin, which was general over the whole surface, but especially dark in the eyelids, the chin, and the temporal regions. There was no puffiness, as in severe cases of asthma, and the general appearance was quite different from that of cyanosis. Although there had been no vomiting, a glass of red wine was immediately brought up, and the stomach was soon afterwards thoroughly emptied, a quantity of bilious matter being evacuated. The treatment consisted in giving sulphate of soda draughts, together with coffee and brandy, also hypodermic injections of camphor in ether, and the application of cold compresses to the head. On the third day the patient was able to leave his bed, and the blue color had entirely vanished. In conclusion, Dr. Hartge, who was fortunate enough to obtain Professor Dragendorff's cooperation in the working out of the case, remarks that there is reason to believe that the acetanilide taken by the patient must have been a remarkably pure specimen.—*Lancet*, April 12, 1890.

THE USE OF TRICHLORACETIC ACID IN AFFECTIONS OF THE NOSE AND THROAT.

The many disadvantages which attend the use of chromic acid in applications to the nose and throat have lead DR. EHRMANN, assistant at the Heidelberg Laryngological Clinic, to substitute for it trichloracetic acid, originally recommended by Dr. Stein, of Moscow (*Wiener Medizinische Blätter*, March 20, 1890).

Trichloracetic acid (CCl_3COOH) occurs in the form of colorless, transparent, rhomboidal crystals of slightly penetrating odor strongly caustic, soluble in water and alcohol, and rapidly becoming fluid when exposed to the air. The crystals melt at 52° C. and boil at 195°, with the production of a strongly irritating, aromatic vapor, and entirely evaporating without leaving any residue. Dr. Ehrmann's experience embraces one hundred and seventy cases, in one hundred and forty of which the trichloracetic acid was used as a caustic. Dr. Ehrmann's method of application consists in applying a moist crystal of this acid by means of a silver probe, and rubbing it over the part which it is desired to cauterize. At first he employed an ordinary silver probe, later on he made use of a silver sound, of which the head was hollowed out in front, thus forming a cup-shaped extremity, in which a smaller or larger number of crystals might be placed. By this means accidental cauterization of healthy parts may be avoided. When the cautery was applied to the nasal mucous membrane a ten per cent. solution of cocaine was first used to deaden sensibility. Immediately after the application of this cautery a bright, ivory-white scab is formed, which remains absolutely localized to the point of application of the cautery. It differs from the slough produced by chromic acid, in that it is uniformly thick, is inodorous, produces no unsatisfactory action, and leaves no unpleasant after-effects. The effects of the cauterization have usually entirely disappeared within five or six days. The procedure may, if necessary, be repeated. The great advantage of the method consists in the fact that it produces no inflammatory after-effects, and is in this respect

referable to the galvanic cautery, in that it is more free from the unfavorable consequences which attend the use of other cauries following the employment of trichloracetic acid; and it is especially worthy of ote that in no case did its employment ever roduce any secondary hemorrhage, and, in ct, in three cases it was used with success s a hæmostatic.

When cocaine has been used, no pain, with he exception of slight burning, which passes ff in a few minutes, is ever complained f.

In the mouth and pharynx no symptoms ere ever produced, or were quite trifling, hen although cocaine was not used. The pplication was, in fact, almost painless, with he exception of slight burning. No vomitng, coughing, or difficulty of swallowing was bserved. The cases in which Dr. Ehrmann mployed this substance as a cautery were f the most diverse nature, and of the one undred and forty, in eighty-seven cauterization was once employed, in thirty twice, nd in the other cases from three to five imes.

The author notes further that two or three pplications are usually quite sufficient to reduce the highest degree of hypertrophy of the turbinated bone. Of these one hundred nd forty cases, only eleven did not return for reatment. Of the other one hundred and wenty-nine, in one hundred and twenty-two final complete cure was attained.

The author thus recommends in the most emphatic manner the use of trichloracetic acid as a local caustic for the nose and pharynx as in this mode of employment far preferable to any other.

THE USE OF COCILLAÑA AS AN EXPECTORANT.

In the *New York Medical Journal* for April 5, 1890, DR. L. HARRISON METTLER publishes notes of five different cases, which illustrate the value of cocillaña as an expectorant. These cases seem to show that at first cocillaña acts as a stimulant expectorant, for although the cough and the expectoration are both at first somewhat increased, as the action continues it becomes sedative, and by overstimulation diminishes the expectoration. It further acts upon the alimentary mucous membrane, causing emesis and catharsis after administration in high doses, but this latter effect does not interfere with its employment as an expectorant, since the dose for that purpose is much below that required to produce nausea or diarrhœa.

Further, Dr. Mettler calls attention to the fact that its cathartic action and nausea need not be feared, unless injudicious dosage be employed. Dr. Mettler has noticed a feeling of weakness and depression to occasionally follow the use of full doses. This difficulty, together with the fact that it is a stimulant, particularly in the form of the tincture, leads to its contraindication in phthisis and all those pulmonary affections having associated with them marked emaciation and debility. In the acute affections of the air-passages cocillaña should never be employed in the earlier stages when the mucous membranes are engorged and the cough is merely of an irritative sort without expectoration. As soon, however, as the period of exudation arrives,—usually from a week to two weeks after the subsidence of the acute inflammatory symptoms; in a word, when the trouble is about becoming subacute,—the use of full doses of the drug will give the happiest results. In the chronic forms of bronchitis, when there is an expectoration that is scanty, thick, and tenacious, the best results have been secured and positive cures obtained. In capillary bronchitis and in the chronic forms of broncho-pneumonia, cocillaña fails to give uniform relief, and for these the writer still retains his preference for the ammonia salts. Dr. Mettler prefers the fluid extract to the concentrated tincture, both for its smaller dosage and greater uniformity of action. In regard to the dose, 10 drops, sometimes 15, of the fluid extract may be given every three or four hours. This would be an average, though we have no doubt but that some cases might bear even 20 or 25 drops. Nausea would be the proper indication that the maximum dose for a certain individual had been reached; hence in some cases the author has ordered the patient to increase the quantity until this effect was first noticed. As the physiological activity of the drug seems to terminate in about six hours, the greatest benefits will be obtained with the doses taken from three to four hours apart. We believe that in cocillaña we have a valuable addition to our materia medica. Of the drugs with which we are already familiar, it resembles most nearly ipecacuanha, and yet its action is sufficiently unlike that of the latter to warrant its being considered a remedy *sui generis*.

TINCTURE OF NAREGAMIA—A NEW EXPECTORANT.

In the *Centralblatt für die Gesammte Therapie*, March, 1890, DR. SCHOENGUT publishes the results of some studies which he performed under the direction of Professor Drashe with a preparation, introduced by Messrs. Parke, Davis & Co., obtained from the *Naregamia alata*, a plant indigenous to Goa. The active principle of the plant is found in the bark, which, when rubbed up, forms a light brown powder, of a peculiar aromatic odor and nauseous taste. According to Hooper, the ethereal extract of naregamia contains an alkaloid, which, after precipitation and drying, occurs in an amorphous powder, which forms crystalline salts with sulphuric, nitric, and hydrochloric acids. From solution it is precipitated by tannin and potassio-mercuric iodide and phosphomolybdate of sodium. It is distinguished from emetine by the formation of crystalline salts with distinct color with acetic acid, while it differs from the cinchona alkaloids by its optical inertness.

Naregamia, in addition to the alkaloid, contains oil, sugar, resin, and other substances; according to Hooper, also, a nitrogenous body may be precipitated from watery extracts, which crystallizes in large, colorless, rhombic prisms, very similar to asparagine. The plant contains no tannin, but contains an organic acid, which is precipitated from alcoholic extracts with acetate of lead.

In India naregamia enjoys considerable repute in domestic practice as a cholagogue, and it has been used in dysentery and as an expectorant with considerable success. At the suggestion of Professor Drashe, Dr. Schoengut tested the value of the tincture of naregamia in twenty-four different cases,—one of dysentery, one of pleurisy, two of pneumonia, four of emphysema, five of bronchitis, four of cardiac disease, and seven of pulmonary tuberculosis,—16 to 50 drops being given daily.

In the case of dysentery, the author states that no effects were noted, and the studies were, therefore, restricted to its use in diseases of the respiratory organs. The cases in which the author found it to produce the best effects as an expectorant were when there was but slight secretion in the air-tubes, accompanied by severe cough, or where thick, tenacious sputum interfered with expectoration. In one case of bronchial catarrh, with difficulty in breathing and asthmatic attacks, naregamia effected especially good results.

The author's results seem to show that naregamia considerably facilitates secreti and renders the secretion in air-passa more fluid, even increasing them in amo It also seemed to facilitate respiration, respiratory movements becoming deeper more regular, although experiments made animals in the laboratory of Professor Basch failed to show any direct influence the respiratory centre.

Naregamia seems to possess no influe on the circulation, even when injected i the veins in dogs, not producing any cha in blood-pressure, with the exception o transient increase of pressure. Its action reducing tenacity of secretion thus render somewhat similar to emetine, although emetic effects of naregamia are much l marked than of the former. Rossbach shown that emetine acts apparently direc on the mucous glands of the trachea a bronchi, and so produces great increase of cretion, without any modification in the blo supply of the part. It, therefore, acts direc on the glands, and is thus a true secreto stimulant. Dr. Schoengut has also obtain similar results from the experiments ma with naregamia on curarized animals, which an increase of tracheal and bronch secretion was produced, without any modi cation of either blood-pressure or hea action. On the other hand, in rabbits, as well known, which do not vomit, while lar doses of ipecac reduce the activity of t heart, respiration, and temperature, simil experiments made with naregamia show th these depressing effects are absent. A though the subject requires further obser tion, it would appear from the author's r sults that naregamia is a direct stimulant t the glands of the respiratory tract. Nar gamia exerts no influence on the digesti organs, with the exception that in certain i stances it may produce nausea, or perha vomiting. The disagreeable taste of th tincture, concerning which numerous com plaints were advanced by the patients, ma be overcome by the combination of the tinc ture with laurel-water. No change, either i the quantity or quality of the urine, follow the use of this drug. It would thus appea that the remedy possesses the power of stim ulating the respiratory secretion, and, by in creasing the energy of coughing, facilitate its removal. Further, it is free from an toxic action. The author offers no conclu sions as to the value of naregamia compared with other expectorants, though he believes that his observations warrant the conclusion

in private practice, especially in cases re numerous other remedies have been dy employed, naregamia may frequently employed with value, and is, therefore, that extent a valuable addition to our teria medica.

E TRANSMISSION OF TYPHOID FEVER BY THE AIR.

The principal characteristic of contempo- y medical science is the attempt, which in ny cases has been largely realized, to de- mine the mode of propagation of infec- us diseases. Although much still remains be accomplished, yet immense progress s been realized in this direction, and it is dly necessary to say that when these ques- ns in etiology receive their solution, pro- laxis will at the same time be greatly anced. In the case of typhoid fever as t but one mode of explaining the spread of s disease is recognized, and that is through e mediation of water, or of drinks acciden- ly charged with typhoid discharges; but e question as to whether water is the sole icle for the typhoid bacillus can only be wered by the recognition of the bacillus the air, and by the establishment by clini- l observation that typhoid infection may ur through the pulmonary passages.

Recently M. FREDERICK BORDAS (*Gazette dicale de Paris*, March 22, 1890) has un- rtaken a series of researches, which appear show that the bacillus of typhoid fever ould be classed among the aërobic micro- rganisms. He has recognized that this ba- illus remains inactive in dry air completely eprived of vapor, and that it continues to ve and even to multiply in an atmosphere ore or less charged with humidity. This st explanation is especially important, as fering an explanation of certain peculiari- ies which have as yet escaped satisfactory xplanation; such, for example, as the great requency of typhoid fever in October and November, months which are ordinarily ac- ompanied by the greatest atmospheric hu- midity. The experience of Dr. Bordas fur- ther shows that the contagion of typhoid fever may be for a long time preserved in its activity, and that the explanation of this is largely found in the fact that the periods of prolonged dryness, which are the cause of destruction for the bacilli, are relatively rare.

Finally, there is nothing impossible in the belief that the bacillus is capable of directly penetrating into the respiratory passages and thus starting the typhoid infection.

MASSAGE OF THE EAR.

The *Archives of Otology* for 1886 tells us that Hommel has discarded the usual methods of mechanical treatment of the membrana tympani and ossicles, and advocates a new method, which he calls *Tragus-Press*. Acting upon the supposition that pressure of the tragus upon the meatus renders the canal air-tight, and condenses the air therein sufficiently to act directly upon the membrani tympani, he releases the pressure upon the tragus, and the sudden escape of the compressed air produces a vacuum and traction upon the membrane. Compression and attraction of the membrane are thus rapidly produced by exerting and relaxing pressure upon the tragus. Hommel suffered from chronic catarrh of the middle ear, and experimented in this way upon himself, and found that his hearing improved in several months from 10 and 40 centimetres for the watch to 150 and 610 centimetres. A similar result was obtained in a boy who suffered from a perforation on one side, and thickening and retraction of the membrane on the other. Prior to this mode of treatment the watch was heard only at 5 centimetres by the left ear and 12 by the right. After nine months of treatment the hearing had improved to 160 and 340 centimetres respectively. Hommel advises this sort of treatment in chronic catarrh of the middle ear; in perforations of the membrane, the handle of the hammer still being in connection with the membrane; in thickening and opacities of the membrane, and as a prophylactic against deafness developing in old age.

In the United States this treatment is usually relegated to the patients themselves, and in the above-named conditions it is not likely that they could make themselves any worse. But harm has been reported as a result of this procedure, and if any one will have it tried on his own well ears he will find considerable discomfort therefrom, suggestive of mischief if kept up.

A much more agreeable and efficacious method than that of Hommel is suggested by DR. DOUGLAS GRAHAM in the *Boston Medical and Surgical Journal* for April 3, 1890. Dr. Graham's method of accomplish-

ing massage of the ear is to apply the hand so that the muscles in front of the metacarpal bone of the thumb will fit accurately into and over the auricle, the right hand for the left ear and the left for the right, and by making moderately strong, circular kneading in a direction backward, upward, and outward, powerful but pleasant compression and suction are created, sensible to the hand of the operator as well as to the ear of the patient. This has none of the disagreeable feeling of "plop, plop, plop," like shooting peas into the ear, which the "*tragus-press*" of Hommel has. Indeed, Hommel's method makes no suction at all (except in theory), for the compression of air which it causes is so slight that its sudden liberation cannot produce any appreciable vacuum, as claimed by its advocates. That benefit has resulted from it there is no doubt, but we must look for a reason other than that given, and it is undoubtedly this, that the vessels of the cavity of the tympanum and the drum membrane anastomosing at the tragus, alternate compression and relaxation of the tragus, produce a pump-like action on these vessels, which draws the blood outward, thus making the circulation go on more lively, bringing more nutritive material, and removing more waste products, as massage does in any other part of the body. But the more agreeable method which Dr. Graham advocates possesses the same advantages also, besides affording very decided compression and suction of air in the external auditory canal.

When desired, the auricle can be grasped at the same time by the fingers behind it, the muscles at the base of the thumb in front, and a circular traction, with the strongest pull upward, backward, and outward exerted; but this does not afford so much compression and suction as when the auricle is not grasped. These procedures can be advantageously varied and their effect increased by *effleurage* or stroking in front of the ear and on the side of the neck, which rapidly aids the return of the blood in the temporal vein and jugulars, and hastens the flow in the lymphatic vessels at the same time, and thus depletes not only the ear but the whole head as well. Passive and resistive movements of the head would also quicken the circulation of this region. The head and face may also be *massèed* at the same sitting, which, besides its revulsive effect, will also have a sedative influence by means of the communication of the fifth pair of nerves with the otic ganglion.

TREATMENT OF ACNE.

The medical treatment of acne is based most exclusively on the employment of ex nal remedies, with the regulation of the d Internal treatment has proved to be of little avail. To this end excessive use meats and spices should be forbidden, the principal reliance must be placed u the external use of topical applicati which may be either stimulating or dest tive.

The first group comprises a series of re dies which exert a slight stimulating act on the skin, such as warm lotions repea several times through the day, or spray with watery vapor. Various soaps may a be employed, and friction with powde soap will also give good results, if appl vigorously for five minutes when the a occurs on the face, ten minutes when on back. This process should be repeated tw daily until a certain amount of irritation produced.

If these measures do not suffice to prod cure DR. A. FOURNIER (*La France Médic* March 14, 1890) recommends the applicati over the part of an ointment, consisting of parts by weight of lard or vaseline, 2 pa precipitated sulphur, 3 parts essence of ro or 15 parts by weight of sulphur may be d solved in 30 parts of camphorated alcohol a 250 parts of water. This lotion should be us in the evening, and not rubbed off until t following morning. The author states th this simple means will ordinarily suffice light cases. In some rebellious cases fricti with oil of cade may be employed, or Vig plasters will also sometimes give good r sults, and should be employed every nig for five or six days successively. Black so produces the most intense irritation, a sometimes may even cause a true inflamm tion of the skin, so that the patient before employment should be warned as to the sym toms which will attend its use. Here, al the application should be made in the eve ing for four or five days in succession, a the soap only washed off on the followi morning with warm water; emollients shou then be applied for several days, and th the treatment recommenced. At the end six weeks the result is generally a satisfacto cure, although, unfortunately, in many case the treatment cannot be persisted in. If t these means fail, more energetic measur must be resorted to, of which the most sim ple is scarifying or cauterization by mea of the ignipuncture.

METHOD FOR ARRESTING THE SPASMS OF WHOOPING-COUGH.

In the *Journal de Médecine de Paris* for March 9, 1890, NAEGELI claims that in two different children he has succeeded more than five hundred times in apparently arresting the spasms of whooping-cough by pulling the lower jaw downward and forward. He states that the result of the procedure is not due to psychic influences, for this method succeeds even during sleep. The parents of the children may themselves employ this procedure, as it is perfectly simple and completely harmless, only it should not be done when the mouth contains food. It is stated that the regular suppression of the spasms of whooping-cough exerts a favorable influence on the progress of this disease, and by preventing the attacks it considerably reduces the mortality of this affection.

CHLORALIMIDE.

Attention has recently been called to the possible value as a medicinal agent of chloralimide. Chloralimide, $CCl_3 - C\frac{H}{NH}$, a substance that must not be confounded with that recently introduced as "chloralamide," which is more correctly designated chloral formamide (*Compt.-Rend.*, cix. 817). Chloralimide was first described by Messrs. Pinner and Fuchs, who obtained it by the action of ammonium acetate upon chloral hydrate (*Berichte*, x. 1068), but Messrs. Behal and Choay now claim that it can be obtained in a state of greater purity as a residue from the action of heat upon chloral ammonia. The product so obtained is described as forming long colorless and tasteless needles, slightly soluble in water, rather soluble in alcohol, and very soluble in ether. It is very stable, not being altered by air, light, or moisture, or by heating in a sealed tube to 150° C. in the presence of water; but at 180° it is said to be decomposed into chloroform and formamide. In contact with a liquid acidulated with a mineral acid it is stated to be decomposed into chloral and the corresponding ammonia salt, but this reaction does not occur with organic acids (*Repertoire*, March 10, p. 109). Further, it is affirmed that, in doses of .25 to .50 gramme (4 to 8 grains), chloralimide has been ascertained to possess remarkable antipyretic and analgesic properties. M. Choay also claims that it would surpass chloral ammonia or chloral formamide in activity, since an equal weight would yield more chloroform than either, while it presents the advantage of being stable and free from unpleasant taste and odor. Herr Ritsert, referring to this substance (*Pharm. Zeit.*, March 15, p. 166), points out that the name applied to it—chloralimide—is not free from objection, since chloral, as an aldehyde, is characterized by an hydroxyl group, which is no longer present in this compound. He thinks it would be more scientific to speak of it as trichlorethylidenimide. Further, the statement that the compound is split up by heating to 180° into chloroform ($CHCl_3$) and chloral and ammonia salts is considered by him to be in contradiction to what is known of the decomposition of chloral, and he thinks proof is required that the compound so described corresponds to the formula attributed to it, or is identical with the chloralimide prepared by Pinner.—*Pharmaceutical Journal and Transactions*, March 29, 1890.

INTRA-MUSCULAR INJECTIONS OF MERCURY IN THE TREATMENT OF SYPHILIS.

In the last part for 1889 of the *Archiv für Dermatologie und Syphilis*, DR. WATRASZEWSKI discusses the effect of the injection of insoluble mercurial preparations into the muscles. The mercurial salts, recommended for their parasiticide effect on theoretical grounds, have not shown any advantage, and practically the question of advantage lies between calomel, the yellow oxide, and the gray oil of mercury. With respect to calomel, while it is undoubtedly very effectual in the treatment of syphilis, it has proved dangerous to the patient, Runeberg having collected seven fatal cases; but the author found that dangerous symptoms could to a great extent be avoided by reducing the dose originally suggested by Smirnoff from 3 grains to not more than ⅔ of a grain, and this, too, without sacrificing its therapeutic efficacy. He regards the gray oil, as recommended by Lang and Neisser, as still more dangerous, instancing Kaposi's fatal case and Hallopeau's case of severe stomatitis, and several cases of fat embolisms in the lungs, which are on record. The author expresses, therefore, a decided preference for the yellow oxide of mercury, but in the reduced dose of ⅔ to 1 grain. These doses he has given thousands of times without ill effect, while the doses originally recommended—of from 2 grains to 2½ grains—have produced serious symptoms, such

as adynamia, diarrhœa, stomatitis, etc. The choice of the vehicle for injection is not unimportant. Those hitherto used have been generally glycerin, olive, almond, or paraffin oils, or gum arabic mucilage. The author made experiments on this point, injecting these vehicles alone into the jugular veins of cats, and found that serious embolic pneumonia was excited by the oily fluids, while the mucilage only produced scattered embolic foci of small size, which were absorbed without subsequent reaction of any importance. These experiments have a practical bearing, for in intra-muscular injections a vein is occasionally pierced, and serious pneumonia has ensued. Glycerin excites local irritation, and is therefore unsuitable. Dr. Watraszewski, therefore, finally decides that mucilage (gum arabic, 1 part; water, 120 parts) is the best, as it combines all the essentials of a vehicle,—viz.: 1. It can be made of the proper consistence to hold the powder in suspension. 2. It has no local irritating effect. 3. It does not decompose the mercurial salt. 4. It excites no general disturbance. In the same number Touton relates a case in which, a few hours after the third injection of salicylate of mercury into the left gluteus muscle, that muscle seemed paralyzed, and then tenderness and pain were felt radiating up to the sacrum and lower lumbar vertebræ, but abruptly terminating at the middle line. The pain lasted two days, but twenty-four hours after its commencement there appeared an abortive herpetic eruption,—*i.e.*, the eruption consisted in papules, which did not develop into vesicles. It was distributed in three groups of firm papules in the course of the left posterior femoral cutaneous nerve; and as this takes its origin from the lumbar plexus, while the injection was in the domain of the sacral plexus, Touton argues that it was reflexly, and not directly, produced by the injection.—*Lancet*, March 8, 1890.

SUB-BENZOATE OF BISMUTH IN THE TREATMENT OF SOFT CHANCRE.

Iodoform is about the best topical application in the treatment of soft chancre, but its tell-tale odor is a very serious objection to its administration when the patient cannot be confined to his chamber. In consequence other methods must be substituted for it, and of these Dr. Finger (*Lyon Médicale*, March 2, 1890) claims that the sub-benzoate of bismuth is the best. When this substance is powdered over the sore, a slight burning sensation is at first felt, but rapidly passes off, and no ir irritation of any kind is occasioned by its u In three or four days or more, rarely five six, the chancre assumes a healthy appe ance, and rapidly progresses towards cu the final stages of which may be accelera by the employment of a two per cent. mixt of carbolized vaseline.

The sub-benzoate of bismuth is obtai by heating the subnitrate of bismuth w nitric acid and benzoate of sodium. It i white powder, with a slightly aromatic odo

---

THE EXCRETION OF MORPHINE IN T MILK.

Numerous cases of poisoning are on rec in which the administration of opium or m phine to a nursing mother has produced to symptoms in the infant. Dr. Pinzan (*Journal de Médecine de Paris*, March 9, 18 has, however, found that when morphine given in therapeutic doses it is not eliminat by the mammary gland as morphine, but it in the body changed to apomorphine, and this form is eliminated in the milk.

Dr. Pinzanni made twelve experiments nursing women, giving to each of them eith 30 drops of laudanum or 4 grains of m phine, distributed in divided doses throu several consecutive days, ½ grain bei given during the first day, and the do being slightly increased after each succee ing day until the total amount was give The milk was then collected morning a evening and analyzed, the albuminoids bei precipitated by the method of Ritthausen.

It was found that the entire amount morphine was not so eliminated either morphine or as apomorphine, and that certain instances it apparently was not elim nated in any marked degree. It should noted, however, that this latter conclusi has been contested by Fehling, Tarnier, an Chantreuil, who especially lay stress upo the danger of believing that any preparatio of opium can ever be given to a nursin woman without seriously endangering th life or health of the infant; and Fehlin records a case of poisoning occurring in a infant in which laudanum had been given t the nurse. Of course, this fact does no prove that in certain instances morphine ma not be eliminated by the mammary glan but that does not relieve one of responsibilit and recognition of the necessity for caut in giving opiates to nursing women.

Reviews.

LECTURES ON NERVOUS DISEASES, FROM THE STANDPOINT OF CEREBRAL AND SPINAL LOCALIZATION, AND THE LATER METHODS EMPLOYED IN THE DIAGNOSIS AND TREATMENT OF THESE AFFECTIONS. By Ambrose L. Ramsey, A.M., M.D., etc. Profusely illustrated with original diagrams and sketches in colors by the author, carefully selected wood-cuts, and reproduced photographs of typical cases.
Philadelphia: F. A. Davis, 1888.

From its title the reader may expect a work on nervous diseases of a very different character from the standard works with which he is acquainted. Cerebral and spinal localization have shed already a great light upon obscure points, and will in the near future revolutionize our methods of diagnosis and treatment, as well as our views as to the location and exact nature of many diseases. The author devotes considerable space to the method of examination of cases, and goes very thoroughly into the question of "eye defect" and "eye-strain" in the causation of many diseased conditions. The author gives a full *résumé* of the researches of Dr. Geo. T. Stevens, and has also thoroughly studied the question himself. He says in regard to this point, "No other treatment has ever yielded me such satisfactory results in severe forms of epilepsy, chorea, hysteria, neuralgia, headache, insanity, and functional visceral derangements. As no drugs were employed by me in many of these cases, the relief obtained must be attributed solely to the method of treatment."

The reader will find, perhaps, the most interesting portion of the book, and the one most likely to afford him new and valuable views of disease and treatment, is the section on "Functional Nervous Diseases." Here the author treats of the "relationship between functional neuroses and anomalies of the visual apparatus." The author gives us the following statements, which form the basis of his remarks and observations, and are so clear and so suggestive that we reproduce them: "1. Errors of refraction often modify apparent muscular anomalies to such an extent as to render the early detection and correction of the refractive errors imperative. 2. Errors of refraction can only be positively determined after the full effects of atropine. 3. No examination for suspected muscular error in the orbit should be regarded as conclusive for diagnosis, or as a basis for any surgical procedure, until the eye has been proven to be free from refractive error or rendered as nearly emmetropic as deemed advisable by properly-selected glasses. 4. All tests employed to detect muscular anomalies must be made with the test-object (candle-flame) at a distance of at least twenty feet from the eye. The 'line and dot test' should also be employed. 5. Observations made for muscular anomalies in the orbit, when the test object is within the limits of accommodation, are not usually reliable as a basis for operative procedure undertaken for their relief. 6. Muscular anomalies in the orbit may be partially or totally latent. 7. Prismatic glasses are not only inadequate as satisfactory remedial agents in most cases, but they may be positively injurious to certain classes of cases. 8. Graduated tenotomy is the only way of satisfactorily and permanently relieving abnormal tension of a muscle in the orbit." The author believes that the difficulties previously experienced in relieving cases of this class are now satisfactorily removed, and that eye-strain from any cause is a serious matter, both predisposing to and perpetuating nervous derangements.

Starting with these points assumed, the author then goes on to illustrate, by cases of his own observation, the remarkable way in which improvement is brought about—and cure also—by acting on these principles. This, to the reader who has been taught to regard astygmatism as the principal cause of eye-strain, and prisms as a very fair substitute for muscular deficiency or excess, will prove of much interest, especially since the author in this portion of the book writes "*con amore*," and is at his best. The electrical portion of the work will be found quite full, and the book, as a whole, well worth owning. E. W. W.

SPINAL CONCUSSION SURGICALLY CONSIDERED AS A CAUSE OF SPINAL INJURY, AND NEUROLOGICALLY RESTRICTED TO A CERTAIN SYMPTOM GROUP, FOR WHICH IS SUGGESTED THE DESIGNATION ERICHSEN'S DISEASE AS ONE FORM OF THE TRAUMATIC NEUROSES. By S. V. Clevenger, M.D., etc. With thirty wood-engravings.
Philadelphia and London: F. A. Davis, 1889.

If the author of this book could by force make every surgeon and, if possible, every practitioner familiar with the subject of which it treats, he would confer a priceless boon on the well and on the injured, on the judges, jurors, and advocates, and, lastly, on the medical witnesses themselves. His suggestion of the name of Erichsen's disease seems to us to have been already made, but his thorough analysis of Erichsen's work shows how appropriate the name would be were it not for the bad taste of making any disease a monument to any man. Bright, Graves, Pott, and Thomsen, and many more, are embalmed in this

way. While the great ones of the earth—the soldier, who destroys; the jurist, who perplexes us; the saint, who strives to improve us—have their monuments in bronze and marble, the physician, far more useful to poor humanity, must be content to go down to posterity associated with some loathsome or painful disease or injury, but disease cannot be a memorial of the man who investigated it without attaching his name directly to it. No matter how disreputable the disorder, we do not know that the modesty of any man has so far led him to disclaim such a title to distinction, as witness the Hunterian chancre and the gonococcus of Neisser. History fails to tell us that Hunter ever suffered from the one or Neisser from the other.

The author has not only given us an epitome of the work of Erichsen in this field, but has provided the reader with an analysis of the work done by Page, Leyden, Erb, Spitzka, Putnam, and many others, so that the reader can get from one book almost at first hand the views of the many workers in this field. Under the head of "Recent Discussions of Spinal Concussion" there is brought together an immense number of facts, observations, theories, and explanations from various authorities. Oppenheim has a whole chapter devoted to his "traumatic neuroses."

The author's own personal observations begin with chapter vi., and include many cases personally noted,—a chapter on "Traumatic Insanity," one on "The Spinal Column," one on "Symptoms of Erichsen's Disease (Spinal Concussion);" very excellent chapters on "Diagnosis," "Electro-Diagnosis," "Differential Diagnosis," "Pathology and Treatment." The last part of the work is entitled "Medico-Legal Considerations," and contains many points of interest and of practical value to the medical witness. In short, the book is convenient, concise, and yet covers the ground much more satisfactorily than more labored and diffuse works on the subject.

E. W. W.

Wood's Medical and Surgical Monographs. Vol. IV., No. 3. December, 1889.
New York: William Wood & Co., 1889.

This number contains a goodly collection of articles of interest. A treatise on "Baldness," by Dr. Geo. T. Jackson; a very valuable paper on "The Sphere, Rights, and Obligations of Medical Experts," by James O'Dea, M.D.; one on "Pathology and Treatment of Ringworm," by Geo. Thin, M.D.; "Notes on Dental Surgery," by J. Smith, M.D., L.L.D.; and "On Sounding for Gall Stones, and Extrusion of Gall-Stones by Digital Manip tion," by Dr. Geo. Harley, F.R.S. The thor of the article on "Baldness" has give a very useful book, and one that inculc sound ideas of treatment. Perhaps on no t are the public more at the mercy of unsafe ignorant guides, the educated physician ing too little attention to the subject till y have rendered him a victim himself, and t even considering it rather a good thing, one likely to increase his reputation for so age and profundity. Women, despite the rious arts of the hair-dresser and the dev of the wig-maker, are the greatest suffer and their appeal, seldom made to educ authority, meets, when it is made, with poor response from that source. But manipulator, the hair-tonic vender, hair-dresser, and the druggist's clerk, are eager exponents of their own remedies methods.

Concerning that most exasperating b ness,—the alopecia areata,—the author thi the microbian theory "unproved." He fi it difficult to answer as to its being contagio and would reply that "Lelvir's conclusi are plausible,—viz., that there are th classes of alopecia areata, viz., tropho-neuro cases apparently causeless, and contagi cases, where contagion could be proved but parasite actually demonstrated." Dr. O'De monograph is on a timely subject, and if stud carefully, will tend to establish in the mind the medical witness such fixed and ratio ideas of what he should and should not say, will make a better witness and a more respe able figure in the future. Dr. Thin's mo graph on "Ringworm" is exhaustive, and standard authority on the subject.

E. W. W.

Chronic Urethritis and other Affections of t Genito-Urinary Organs. By M. Berkeley H F.R.C.S.
London. H. K. Lewis, 1890.

This brochure consists of three lectur which were delivered at the College of S geons, and is more especially devoted to t description of the lesions which may be p duced by the inflammatory process within t urethral canal, studied by means of reflect light. The colored plates which illustra the work assist very much in demonstrati the actual appearances of the mucous me brane of the urethra in the different stages inflammation.

From the investigations of Mr. Hill, t

doscope, when used to study the effects of inflammatory process in the urethra, shows at the acute process may result in producing chronic inflammation of the canal, and that is condition may be:

"1. Superficial granular thickening of the mucous membrane.

"2. Inflammation of the glands and lacunæ.

"3. Areas of induration, which mucous tissue will be converted into fibrous tissue if the inflammation continues some months.

"4. Patches of fibrous tissue penetrating beyond the mucous tissue."

The success of any method of treatment must depend upon a knowledge of the nature of the lesion to be treated, and when different lesions may give rise to the same symptoms, it follows that very often the symptomatic treatment of diseases is positively wrong. In chronic urethritis we have an example of this class of affections,—that is to say, the symptom gleet is present; but the cause of the symptom may be due to several pathological conditions, and it is the correct recognition of the morbid change, giving rise to the symptom, that will indicate the proper line of treatment. The endoscope in Mr. Hill's hands not only indicates the pathological lesion, but is also an instrument by means of which the diseased parts may be directly reached, and from his experience this affection is only to be treated successfully by local applications,—nitrate of silver solutions for granular areas, and gradual dilatation for indurated areas. In so far as the treatment of the affection is concerned, the author offers nothing new, but the method of application and the time when to apply our remedies are indicated by the employment of the endoscope.

The third lecture is devoted to the prostate gland, in which is considered prostatitis and tubercle of the prostate. The former, as prostatic catarrh, and chronic inflammation of the substance of the gland, is described as seen by the endoscope; its treatment does not differ from that usually given. The obscurity which generally accompanies tuberculous disease of the genital organs is such that any information which may assist in removing the difficulties of diagnosis in these cases is always welcome. Therefore the observations of Mr. Hill on tubercle of the prostate are of special interest, and contain much that is important, especially in regard to the treatment of the affection.

J. H. C. S.

THE PHYSICIAN'S LEISURE LIBRARY. SOME FALLACIES CONCERNING SYPHILIS. By E. L. Keyes, M.D. Detroit, Mich.: Geo. S. Davis, 1890.

There are few—perhaps we would be more correct to say there are none—who have practised medicine for even a short period who have not during that time been confronted with just such questions as are answered by Dr. Keyes in the small book before us, and it may be that even now they are in doubt as to their proper solution. To all such we believe Dr. Keyes has in most instances given a satisfactory answer; at least we have the opinion of one who has had a large experience in this very common affection, and one whose views must carry great weight with the medical profession, for as a teacher and writer none stand higher than Dr. Keyes in all relating to diseases of the genito-urinary system and venereal affections. Upon some of the doubtful points, on which most writers do not give definite answers, and leave us very much at loss as to the possible nature of the lesion or the method of treatment to be adopted, the author has given us his views in quite positive language, which, if they do not agree with ours, are those of one who has had a very large experience in this special branch of medicine, and should be carefully considered.

J. H. C. S.

A NEW MEDICAL DICTIONARY. By George M. Gould, B.A., M.D., Ophthalmic Surgeon to the Philadelphia Hospital and Clinical Chief of the Ophthalmological Department of the German Hospital, Philadelphia. Philadelphia: P. Blakiston, Son & Co., 1890.

The preface states that this work is designed to cover a large number of words which have been recently coined in the study of bacteriology, ptomaïnes, leucomaïnes, and the various special branches of medicine. The author further claims that he has framed all definitions by the direct aid of standard authorities, and that obsolete words have been omitted. The result is a work of handy size,—a little over five hundred pages in thickness,—and one which is claimed to contain several thousand words not contained in other dictionaries of its size.

One of the most admirable features in Dr. Gould's dictionary is found in the elaborate and complete tabulation of large groups of facts. Thus we have tables of the micro-organisms, ptomaïnes, and leucomaïnes; of muscles, nerves, arteries, ganglia, plexuses; of abbreviations, prefixes, and suffixes used in medicine; of comparison of thermometers; of weights and measures; mineral springs; vital statistics, etc. These tables

must prove very serviceable, and are not to be found in any other work of the kind, the table on leucomaïnes and ptomaïnes giving their chemical composition, with name of their discoverer, their sources, and their physiological action, while the micro-organisms are arranged in tabular form, with their habitat, their characteristics, their behavior in different cultures, and their specific actions. This is a feature, which, as far as we know, is an original departure in medical literature, but one which will, we know, be of great value. We know of no work in which so many important and yet isolated facts may be obtained without great expenditure of time. The tables of muscles, nerves, arteries, etc., seem to be very complete, and, in looking through the dictionary, we are struck by the good press-work, clear type, and handsome paper, while no one of the many words which it occurred to us to look for have been found absent.

A Reference Handbook of the Medical Sciences, embracing the Entire Range of Scientific and Practical Medicine and Allied Science. Edited by Albert H. Buck, M.D., New York City. Vol. VI. New York: William Wood & Co., 56 and 58 Lafayette Place, 1888.

Our readers will probably remember that we published some time since a review of the eighth volume of this work, but the sixth volume was only received in the editorial office of the Therapeutic Gazette some days since. The title-page of the eighth volume bears the date of 1889; the title-page of the sixth bears the date of 1888, while volume seven has not yet reached us. What all this means we do not know; whether the lacking intermediate volume has been delayed in transit or publication is beyond our ken. Certain it is that only one volume remains to complete this work, which seems to us one of the most useful and one of the most thorough publications that ever issued from the American press. We know of no medical encyclopædia which to us seems to be as useful and satisfactory a book of reference for the busy general practitioner as does this so-called "Reference Handbook."

The articles in the present volume are of an almost uniformly high character. The list of subjects considered is extremely large, and its contents extremely varied. We have found much information, especially upon points of climate and health reports, and other matters of such character as can scarcely be hunted up elsewhere. Volume six commences with "Prairie Itch" and ends with "Teplitz-Schnau;" volume eight commences with "Wood seed." Between "Te" and "Wo" is, therefore the chasm remaining to be bridged.

Wood's Medical and Surgical Monographs.

August, 1889, contains an excellent article Dr. Maximilian von Zeissl on "The Treatment of Syphilis at the Present Time," which describes about every recent improvement syphilitic medication. Dr. Jas. S. Stewart "Treatment of Inebriety in the Higher and Educated Classes" is a short but earnest plea for longer time and fairer play in the effort reform the inebriates of the classes he describes. In the home treatment, where, for a proper remuneration, an educated medical man undertakes the sole charge in his own house of one inebriate, and keeps his eye on him, cheers and encourages him, takes him around in his country drives, and in a year or two returns him to society, cured, the only difficulty seems to be that the physician must be quite a rare character, with not too much to do, living in a very healthy rural neighborhood, and quite willing to introduce such an element into his family life. We should fear that the number of such physicians available would be too small "to go round," and that the mass of the great army of educated inebriates might go begging for such a medical paragon as Dr. Stewart recommends.

The most of the volume is taken up with the "Manual of Hypodermic Medication" of Drs. Bourneville and Bricon, which is exhaustive in its study of all known drugs in hypodermic use. This, for reference, will prove an invaluable aid, and cannot fail to suggest to the careful student new uses for his hypodermic syringe, which uncounselled he might fear to employ. E. W. W.

Correspondence.

LONDON.

(From our Special Correspondent.)

We do not, perhaps, pay sufficient attention to the investigation of the properties of old drugs,—of those whose position has become more or less definite. The greater part of pharmacological and therapeutical research now occupying so many medical scientists in various countries is concerned with the discovery and investigation of new remedies. The remarkable results obtained

m bacteriological work have stimulated
investigation of antiseptic substances,
this is, no doubt, to the great advan-
e of practical medicine, for practition-
are getting more and more to think that
tiseptics and germicides are essential to
combating of disease, especially in our
plicated and comparatively unhygienic
n-life. Similarly, pathological research
aiding the practitioner in the correct un-
standing of fever, and it is no matter of
prise that the pharmacologist and thera-
tist should seek for new remedies to aid
patient in fighting the fever. Whether
numerous antipyretics which have been
oduced are really of great service is a
tter of opinion: they certainly do not
sess the extraordinary value set on them
some. Pain, too, is always with us; and
symptoms accompanying it, nervous, as a
e, and expressed by the terms neurosis and
chosis, are, no doubt, aggravated by the
h pressure of modern life, by the spread
education, of forced excitement, and of
e other accompaniments of a busy town-
e. To counteract this increase of "pains"
modern life, the pharmacologist and thera-
tist have introduced, and are still dili-
tly searching for, remedies to relieve
se symptoms,—analgesics, hypnotics, etc.
me of these remedies recently introduced
e of lasting value in the treatment of dis-
e,—chloral and cocaine, for example;
hers have been found wanting.

There is yet another class of remedies
hich is now receiving some attention,—
., cardiac remedies. Digitalis, serviceable
iend as it is, does not fulfil all the duties in
leviating the symptoms of cardiac failure
nd disease. The drugs recently introduced
e not, however, superior to it; and although
is a desideratum to discover a remedy which
ill stimulate the cardiac muscle in cases of
s failure, it is doubtful if any drug will bene-
t the decreasing power of a fatty or fibroid
ardiac muscle.

With all this activity in the introduction of
ew remedies (and a very commendable ac-
ivity it is), too little attention is paid to old
emedies; and much might, no doubt, be
earned from an investigation of these by the
ight and with the methods of modern science.
It is with some pleasure, therefore, that one
urns to the investigations on "salicylic acid,"
ately published by Professor M. Charteris, of
Morgan, in a paper read before the Royal
Medical and Chirurgical Society of London.
Dr. Charteris commenced by discussing the value of the various modes of treatment of rheumatic fever: his remarks on this subject expressed the generally received opinion of the profession, and need not be repeated here. The important part of his paper, however, was occupied with the differences between the artificial and natural salicylic acids; between that obtained from carbolic acid and that from the oil of winter-green or the oil of sweet birch. Most of the salicylic acid in the market, which is, of course, the form administered in disease, is the artificial variety. Some practitioners rely exclusively on salicin. Salicylates, as is well known, are liable to produce poisonous symptoms, such as headache, singing in the ears, and delirium; and the production to a certain degree of poisonous symptoms is by some considered almost essential in the effective treatment of acute rheumatism. However this may be, the poisonous symptoms produced were at one time considered to be due to the presence of carbolic acid, a probable impurity, since it is the substance from which salicylic acid is prepared. The carbolic acid theory is only a theory, and has long since been discarded. But there *is* a poisonous impurity in artificial salicylic acid, and it is with the investigation of this body that Dr. Charteris's paper dealt. It was observed that the poisonous doses in animals of the artificial and natural salicylic acid preparations differed greatly. Thus, 30 grains of salicin, 10 grains of *natural* salicylic acid, and 32 grains of *natural* salicylate of sodium had no poisonous effects on rabbits weighing two and a half pounds. On the other hand, such animals were killed by 10 grains of *artificial* salicylic acid and by 18 grains of *artificial* salicylate of sodium. This result is sufficiently remarkable, and indicated to Dr. Charteris the presence of an impurity in the artificial products. On further investigation, the impurity was found to be quite different in appearance to salicylic acid, being in appearance like coarse flour. It is very soluble in water, and is probably a derivative of creosotic acid. It is, however, a very poisonous substance, for 1 grain proved fatal to a rabbit weighing two pounds.

Dr. Charteris did not, however, rest content with identifying this poisonous impurity: he has devised a method for separating it from the commercial salicylic acid. The acid was combined with calcium, forming calcium salicylate, and salicylic acid set free from this calcium salt by adding hydrochloric acid. The acid is, of course, precipitated, and it is then purified by crystallizing it four

times from hot water. In this way a pure salicylic acid is obtained, which differs in no respect from the pure natural acid.

It may be considered by some an unimportant point to separate an impurity which exists in such small quantity. But a little consideration will show that the removal of this impurity would be of benefit. Salicylic acid, in the form of salicylate of sodium, is extensively employed in medicine for internal administration, and in such large quantity that it has to be prepared artificially from carbolic acid. It is, moreover, often given in some cases (rheumatic fever, for example) in large and repeated doses, 15 to 20 grains of salicylate of sodium every four hours,—*i.e.*, about ninety grains in the twenty-four hours. From Dr. Charteris's experiments, this amount of salicylate would contain about five grains of the poisonous impurity, an amount which cannot be considered as anything but harmful, since 1 grain is fatal to a medium-sized rabbit. It cannot be considered as serving any useful end that, besides the salicylate which we prescribe, the patient receives a poisonous body, the amount of which may, as far as we know, vary considerably; and, although severe toxic symptoms are not commonly noticed during the administration of the artificial salicylate of sodium, yet it seems reasonable to remove an impurity which *may* produce poisonous symptoms.

The result of Dr. Charteris's practical research ought, therefore, to be the purification of the artificial salicylic acid by the manufacturer, and various producers of salicylic acid have, we believe, fallen in with Dr. Charteris's views on the subject.

PARIS.

(From our Special Correspondent.)

The French Medical Association—The Value of Expert Work—Calomel Plasters for Syphilis—Sublimate in the Pitting of Small-Pox—A Deadly Bugle—Vaccinating with Steel Pens—Surgical Thinning of a Fat Man—Obituaries of Dr. Trélat and M. Péligot.

The "French Physicians' General Provident and Mutual Benevolent Association" (Association Générale de Prévoyance et de Secours Mutuels des Médecins de France) is now holding here an unusually important annual meeting. While much of the proceedings are of mere domestic concern, some points offer general interest. From the treasurer's report, for instance, it appears that the various funds aggregate the gratifying sum of five hundred and forty thous dollars in round figures. The income year from dues and initiation-fees was ab twenty-seven thousand dollars, which responds to a membership of over ten th sand. The pension fund amounted to hundred and sixty-eight thousand doll and the income was used for eighty-four pensions at one hundred and twenty dol and one at sixty dollars. From the usual come—dues and fines—seventy-four m pensions were served to disabled physici or their families. Another feature of meeting worthy of mention was the disc sion of the new rates of compensation expert medical work, to be presented to Legislature as the wishes of the French m cal body. It will probably be remembe that physicians have been for some time loggerheads with lawyers about the ridicul compensation allowed by an old law, strictly adhered to by the judiciary. Fina losing patience, the Rodez physicians—so erners, of course—struck, and refused to o a judicial requisition in a now celebrated c Before a justice of the peace their defence a legal quibble, which did not save them f being sentenced to a nominal fine. Upon pealing to a higher court, on the same q ble, the judgment was reversed. And, fina the case came up before the Cour de Ca tion, the highest court in France, which week, always on the quibble aforesaid, cided against the physicians and confirm the original sentence. This was great f about a dollar and a quarter fine, which la yers must have enjoyed all the more that real point at issue never was mentioned. in the mean time they had been set a-thinki that in many cases they cannot get alo without the willing co-operation of exp physicians; that there are many ways evade a law without violating it; and that is proverbially hard to make a bird sing th will not sing. So overtures were made to t physicians by the Minister of Justice, requ ing them to state their desires, which wou be presented to the French Parliament n in session. After preliminary discussions t local societies passed various resolution which were submitted to the general ass ciation, with power to embody them into o bill, comprehending the desiderata of the pr fession. As the question was to come up the present meeting, the number of delega and members in attendance at the gatherin was larger than it ever was before, ev during the Exposition. The following is th

of rates agreed to: For each visit, with ten report, $2; examination with special ruments, $4, written report extra; post- rtem on a fœtus, $3; on an adult, $6; r exhumation, $10, operating and travel- g expenses extra; also for each report and h three hours' sitting, $1.40 by day and by night. The compensation named by ch physicians is certainly quite reason- e. And, by the way, from a recent report ppears that in England, where prices are general not very different from France, dical witnesses are allowed one guinea for ndance at a coroner's inquest, or two neas for a post-mortem and attendance to e evidence as to the result thereof; their enses are besides to be reimbursed. An- er point, considered during the discussion, a delicate one, and in reference to the fact t, according to the present law, any and y physician may be compelled to act as expert whether he feels competent or not. agistrates," said Dr. Brouardel, "seem to e every doctor of medicine for a cyclo- dia. But the physician who has not made cial studies is aware that during the inves- tion he may be confronted with complica- s unfamiliar to him, wherein he feels him- liable to mislead justice. He knows also t after arduous work he will have before public to face the defence, who will ques- his conclusions and try to discredit them. wonder, then, if, feeling unequal to the al, he would prefer declining to serve. law should contain provisions contrary to physician's conscience and the interest of tice." It is to be hoped French Parlia- nt will find time enough to spare from poli- s to enact some equitable measure in place an antiquated statute.

At the meeting of the Society of Derma- logy and Syphiligraphy, which was held o in Paris a few days before the fore- ing, Mr. Quinquaud recommended a new thod of exhibiting mercurials, which he s found preferable to both the old mode d the more recent of hypodermic injec- ions. He has obtained very good results ith calomel plasters applied on the splenic egion. The plastic mass is composed as ollows:

Diachylon plaster, ℥lx;
Calomel, ℥xx;
Castor oil, ℥vi.

Mix, and make plasters four inches by four inches, or spread on cloth and divide into squares of the above ize.

Before applying the plaster, wash the skin with soap and water, affix the medicament in the proper place, and leave it on for eight days. Then remove it, and cease treatment for eight days, after which apply another plaster for the same period, and so on. With hard-working patients the plaster is to be changed every four or five days. The absorption of mercury into the system can easily be watched in the following manner: Acidulate about a pint of the urine with muriatic acid, destroy the organic matter with potassium permanganate, and filter the liquid through a sharply-tapering funnel, so that it will fall drop by drop on a small copper-wire coil. Next introduce the coil into a test-tube kept slanting, and place a small particle of iodine a few centimetres above the metal. Upon heating, the presence of mercury will be manifested by the formation of a ring, yellow or red, according to the quantity. A yellow or pinkish-yellow color indicates mere traces. The investigation is not, as a rule, necessary in current practice, but it has enabled Dr. Quinquaud to follow up the mode and rate of absorption. It was found, from observations on some twenty patients, that mercury appears in the urine only four days after the plaster is on, and for three days the ring will be yellow, with a pinkish tinge, gradually deepening. After the seventh, and especially on the ninth and tenth days, the ring will be decidedly red. On suspending the treatment, after twelve days mercury was still found in the urine, and traces were yet apparent one month, and even six weeks, after the plaster's removal. The curative effects proved to be the same as usually obtained from mercurials in general, with the advantage that the stomatitis almost inseparable from stomachal administration was avoided; also that patients were saved the pain and accidents resulting from injections.

While on the subject of mercurials, mention should be made of a new way to use our old friend—mercuric chloride—for preventing the pitting of small pox. Dr. Talamon, at the Hospital Medical Society, has recommended the following procedure. The subjoined solution is first to be prepared:

Corrosive sublimate, gr. xv;
Citric acid, gr. xv;
Alcohol, 90°, ♏lxxv;
Ether, enough to complete, f℥xiiss.

The solution, which contains two per cent. by volume of sublimate, is to be applied with an atomizer, as follows: For the first or second day of the eruption, the face should

be washed with soap and water, rinsed with borated water, and wiped dry with absorbent cotton before the spray is used. But after the third day the washing is unnecessary. Now, the eyes being protected with borated wadding, the solution is applied with the atomizer, so as to give to the skin a slight frosty appearance, and yet avoid the danger of blistering through too copious a dose. For the whole face, the operation should barely last one minute. Of course, the spray is to be directed chiefly to such parts as are most affected with incipient pustules. And, lastly, after fifteen minutes, the face is to be rubbed with a pledget of wadding dipped in a glycerin solution of sublimate, half a drachm to the ounce. The operation is to be repeated three or four times every twenty-four hours during the first three days, and twice until the sixth or seventh day, when the spray may be discontinued, the glycerin painting being kept on until the scabs begin to drop off. The treatment has been found successful in nearly all cases (confluent small-pox, of course, excepted), and salivation never appeared, the diseased skin failing to let the metal through. Verily, as Dr. Ricord used to say, the golden age and the silver are long past; we live in the age of quicksilver.

Indeed, contagion is the modern physician's nightmare and antisepsy his hobby, both of which nags he loves to ride. Among the strange cases of contagion, the following is gravely related by a major in the French army: In a regiment several musicians were noticed to die of phthisis, one after the other. The major's attention having been called to the occurrence, an investigation was made, whence it appeared that, the instruments being the property of the state, the same bugle had passed in succession from one performer to the other, with apparently fatal results to all of them. Next in order was an examination of the bugle, where an experienced micrologist, called upon for the purpose, detected, back of the mouth-piece, a quantity of dried saliva, which, on being dissolved out with sterilized water, and tested microscopically and through cultures, proved to be full of tuberculosis bacilli. Although some may wonder how it is possible for a man to catch anything from an instrument generally needing pretty hard blowing, the two investigators were convinced that the bugle was the death of several men.

To avoid the danger of communicable diseases, another army surgeon, Dr. H. Maréchal has imagined an ingenious device, well adapted to the use of practitioners having numerous vaccinations to perform. Considering the difficulty of rapidly insuring the cleanliness of a lancet, he has hit upon the idea of having a new instrument for each patient, and for the purpose has found steel pens cheapest and most convenient. He recommends the unfinished steel pen,—that is, the form before the slit has been cut in, which, in this country, can be purchased from manufacturers at about seven cents a hundred. All that is necessary is to sharpen one side on a grindstone. The work can be done in a very short time, and thus each patient may be vaccinated with an instrument which, having been used on no one else, will be sure to impart no contagion. Of course, bovine virus alone will do, else all precautions would be vain.

Always, thanks to antisepsy, surgeons nowadays will undertake the boldest sorts of operations, and encroach more and more on the domain of therapeutics. Last month, for instance, Drs. Demars and Marx successfully began the surgical treatment of a patient affected with obesity. In good justice it should be said all the drugs had been tried in vain, and the man had such an accumulation of fat over his abdomen that it formed a fold, hanging down and covering his thighs like an apron. Not only was walking greatly impeded, but painful erythema and intertrigo had developed to a dangerous extent. Our surgeons decided upon a radical treatment. They made on the abdomen two horizontal incisions, one over the pubis and the other two inches below the navel; the two incisions were about nineteen inches long and six inches apart near the median line, and met at an acute angle on either of the patient's sides. The operators thus removed, adhering to the skin, a strip of fatty tissue, nearly five inches thick, weighing four pounds and a half. The operation having been made under strict antiseptic conditions, the wound healed up by the first intention without suppurating, although there were thirty-five suture points, and the patient was three weeks later attending to his usual business. Even a second dressing of the wound never was necessary. The man has experienced so much relief that he wishes to have another operation undertaken, which this time is to be on either side of the umbilicus.

Two noted scientists have died this month,—namely, Dr. Trélat, of the Academy of Medicine, and M. Péligot, of the Academy

Sciences. M. Trélat, Ulysse, was born in ris in 1828, and graduated in 1854. He ame a fellow of the faculty in 1860, with hesis on phosphorus necrosis. After being succession physician to the Maternité, nt-Antoine, Pitié, and Charité Hospitals, was, in 1872, appointed a professor of sur- al pathology at the Paris faculty, and in 74 elected a member of the Academy of dicine. Many memoirs of his have ap- ared in medical periodicals, also articles in tionaries and cyclopædias, on most varied jects, but he leaves no important work. was an exceedingly skilful operating sur- on, unerring in diagnosis, and speedy in formance. His forte, however, was lec- ing and debating. In those lengthy dis- sions common to medical—and other—so- ties he would let all speak out, and when ery one was tired, and things were inextri- bly mixed up, he would rise, in a few clear tences recapitulate the arguments on either le, and present his own conclusions, which re always accepted unanimously.

Péligot, Eugene-Melchior, was born in ris in 1811. He graduated in 1829 from e Central School of Arts and Manufac- res, and soon became the celebrated chem- Dumas's help and co-laborer. He was pointed in 1837 a professor of chemistry at e same Central School, in 1846 professor of dustrial chemistry at the Arts-et-Métiers nservatory, and in 1880 chemical director the Paris Mint. In 1852 he was elected a mber of the Academy of Sciences. He has blished important treatises on analytical emistry, also on glass-making, and in 1847 scovered the metal uranium, now used so tensively for coloring glass. Near the be- nning of this year he resigned his position the conservatory, and was succeeded by rofessor Jungfleisch, of the College of Phar- acy. Let this abnegation be mentioned to is praise, as the celebrated saying, "They eldom die, and never resign," is a maxim pplying to others than politicians.

PARIS, April 18, 1890.

BERLIN.

(From our Special Correspondent.)

Eight days ago yesterday we were at Professor Leyden's, whose house was resplendent with flowers and costly presents. Our object was to present him with a bust, modelled by Schaper, a gift from the former pupils, colleagues, and other admirers, in honor of the twenty-fifth anniversary jubilee of his professorship.

The post of honor was given to Nothnagel, the oldest friend of Leyden, who spoke in eloquent language on making the presentation. Great was the number of speeches that followed from the representatives of the various societies that took part in the jubilee.

In a specially humorous manner Leyden thanked the representative of the temperance society by telling him he had himself always been a follower of their principles "theoretically." Two days later the Society of Clinical Medicine gave a splendid banquet of two hundred covers in honor of the distinguished professor.

This is not the place to treat of Leyden's labors in endeavoring to raise the standard of medical science. His successful investigations in the various branches of medicine are renowned.

Leyden worked especially towards promoting the development of medicine in Germany through the founding of the Society and of the Congress of Medicine, which is recognized as part of his work, and which has contributed enormously in effecting the personal intercourse among the co-laborers in great works and problems of present day science.

The works of these two corporations rank among the very first in the field of medicine.

The Medical Congress begins its sittings to-morrow in Vienna. The great number of themes which the daily bills present leads one to expect full debate and discussion.

Another Congress closed its sittings yesterday,—the Nineteenth Congress of the German Society of Surgery.

The opening of the Congress, for whose foundation we have to thank Bernard von Langenbeck as its starter, was effected in a worthy manner by Professor von Bergmann, who occupied the chair at the time. He remembered in becoming words the protectoress of the Society, the deceased Empress Augusta, and he then gave a fitting testimonial of thanks for the lasting services rendered by Richard von Volkmann. The purchase of the site of the Langenbeck House was made by the Society. Almost at the moment of the conclusion of this transaction came a despatch from his majesty the emperor stating that he contributed one hundred thousand marks for the Langenbeck House enterprise. The time is not far distant when the German Surgical Society will have a worthy home to hold its meetings. In regard to the business pro-

ceedings, it is to be mentioned that Professor Ollier (Lyons) was chosen honorary member of the Society, for the current year Professor Thiersch (Leipsic) has been chosen to preside at its first sittings, and that Professor von Bergmann believes he will take a leave of absence for the months of March and April, 1891, when the Society shall enter upon its new year.

The scientific questions touched by the Society met with so much contradiction that the most important deserve but a short mention here. Kappeler (Stansterlingen) spoke in regard to narcotization. For the exhibition of chloroform and air, which secures safe narcotization, he uses an apparatus in which the air does not pass through the chloroform but strikes across its surface. By this apparatus very much less chloroform is used than by others, and it has also proved itself highly successful in numerous operations. Kappeler declared himself against ether narcosis, as with his apparatus the amount of chloroform given can be perfectly regulated, and death by chloroform can be prevented better than formerly. All deaths under chloroform cannot be avoided by this apparatus, as many of these should not be attributed to chloroform, but to shock from trauma, hemorrhage, etc.

Professor Bruns was inclined towards ether, since this affected the pulse but slightly, whereas the bad influence of chloroform, upon the circulation is well known.

Dr. Thiem (Kottbus) gave his experience in trials with bromethyl. The drug, in the main, produced a bromethyl hypnotism, in which it was possible to carry out small operations, as the condition only lasted fifteen minutes, and then returned to the normal again. It had, moreover, the power of producing absolute narcotization in certain people, which, however, was attended with more severe sequelæ, and its use in this direction, therefore, is to be wholly disapproved.

Remarkable are the results obtained by many surgeons with iodoform injections in a ten per cent. oil emulsion, or in the form of a mixture with water, in cases of tuberculous joints. A trocar is introduced into the diseased joint, through which it is completely cleansed of its contents, and then the iodoform mixture is thrown in. The injection is given every eight days. Krause (Halle), after removing the discharges from the joint, washes it out with a boracic acid solution, and then fills it full with iodoform-water. He further recommends motion and massage.

Trendelburg has also had experience with the same application in cases of tubercular pleurisy, and he has tried it in phthisis. In the latter case the lower lobe was the seat of the affection. The injection was well borne here, but we cannot tell of the result yet, as it is of too recent a date. Further trials in this direction may well be given. The results obtained by the above-mentioned method of treating tuberculous joints certainly give much satisfaction, as the patients exhibited proved. The function was almost completely recovered; not only did the joints and extremities heal up, but the cure effected was lasting (observations were kept as long as two years).

With regard to resection and recreation of the liver, Professor Ponfick shared the following opinion with Dr. Eingriff, that the secretory function of the liver was of less importance than was its circulation. Experiments on animals show that three-fourths of the organ can be removed (one-fourth even in three to four days) without the animals being visibly affected. After the animal has been killed, it is found that the liver has not only replaced the piece that had been removed, but the new part is of much greater magnitude than the old. A recreation of liver-tissue to the extent of one hundred and twenty per cent. occurs, when one wishes to compare it with the normal at one hundred per cent. The more radical the attack the faster does the recreation proceed. In five days perhaps eighty per cent. would be replaced.

Electro-puncture presented good results in the treatment of aneurisms. Tillmanns (Leipsic) told of a cure in a case of aneurism of the ascending aorta. The anode, as a small, fine needle without insulation, was introduced to the extent of five centimetres; the cathode as a plate, placed upon the skin in the neighborhood of the tumor. At first ten, later twenty, cells were used. The intercalated stream of moisture received the current and swellings, so that the operation was painless. Strict antiseptic sittings lasted five to ten minutes. The aneurismal sack contracted and the pulsation became weaker. In another case, treated in the same way, which terminated fatally from internal hemorrhage, the aneurism showed very many thrombi formed. The method, then, is fitted to relieve the conditions; scarcely to the extent of affecting a cure.

In the cases of tuberculous kidneys, according to Madelung (Rostock), not only is nephrectomy admissible, but it is absolute

icated, when the cases are well marked
l are taken at the proper time.
Perityphlitis, which formerly belonged to
dicine in its treatment, should certainly,
it appears, be given over to the province
surgery. When more authority is forth-
ing the affection will certainly be treated
gically.
If the symptoms persist under the ordinary
dical treatment for a few days, if the tumor,
n, etc., do not subside, then is the incision
the abscess imperative.
Perityphlitis does not always present the
mptoms of perforation of a fæcal calculus,
t resembles an inflammation of the ileo-
cal connective tissue, for which an incision
trenuously demanded.
In the case of chronic recurring peri-
hlitis, the resection of the vermiform
cess is recommended.
Also in many diseases of the central nerv-
s system surgical treatment shows itself to
e a good outlook.
More cases at the Congress presented
n view. The one, a boy, aged 5, had re-
ved a blow upon the head that jammed
e skull together and caused a hemorrhage,
h an outflow of small particles of brain
stance. Sawing out a piece of bone, six
d a half centimetres long by four centi-
tres wide, covering over the defects by
n, reduced the great anæmia and aphasia
t were present before the operation (the
tient had not been able to make himself
derstood, owing to the shaking and nod-
ng of his head).
A second patient had received a blow from
beer-glass on the left side of his skull.
fter suturing the wound, a small fistula still
mained, without any other abnormal symp-
ms, until six weeks after the injury epilep-
c attacks began. Upon widening the fis-
la, a brain abscess was discovered, four or
ve teaspoonfuls of pus was removed, and,
fter closing it up, cure was rapidly effected.
he patient was free three months after the
njury.
In cases of spinal paralysis, Kraspe (Frei-
urg) recommends the trepanning of the ver-
ebral canal as not only legitimate but as
being strictly demanded whenever the pri-
mary tubercular focus is situated in the
arches of the vertebræ, and the pathogenic
mass (tubercular) has worked its way out
into the extra-dural portion of the canal. If
the process has extended beyond the bodies
of the vertebræ, operation is only indicated
by extreme pallor, since in such cases there
is not much more to lose. Otherwise one
must desist from operating, since by re-
moving the arch, you rob the vertebral body
of its last support. One must try other means
at first of curing the paralysis before ven-
turing on an operation.

The following four addresses and communi-
nications were of great interest:

Kronlein (Zurich) delivered an address on
myomatomy, with support to the uterine liga-
ments (which has never before been written
of as a successful method of treatment),
where, after the operation, conception and
gestation occurred in a normal manner.

Schröder had proposed to support the tubes
and ovaries in this operation. Formerly there
was no case of this kind known in which ges-
tation ran a successful course.

Kronlein performed the operation in a suc-
cessful manner on a 25-year-old married
woman. The mother gave birth to a healthy
child after normal gestation.

König (Göttingen) spoke of resection of
the intestines in cases of tumors and other
diseases of the intestines that lead to steno-
sis. The diagnosis is often difficult, even
impossible to make. It is not always possi-
ble to distinguish between an ulcer of the in-
testines and one of the pylorus. The symp-
toms of incarceration are not always apparent
at first, as sometimes there is no fæcal arrest.
Hemorrhage is of great importance. When-
ever the tumor is recognized, it is to be re-
moved. The line of incision is not always in
the middle, but must be where the tumor can
be most readily reached.

Mikulicz (Königsberg) has been trying ex-
periments that are worth printing. He en-
deavored to find how great a portion of the
whole mass of blood is lost on the operating-
table. Blood can be measured by counting
the corpuscles, or, better, by measuring the
amount of hæmoglobin. One must then
know how long it takes for the blood to be
renewed, and what influence age, sex, consti-
tutional disease (tumors) have on it. The
average was taken from a number of counts.
Men have the largest amount of hæmoglobin,
children the smallest. Blood is regenerated
by young men the quickest, most slowly by
old women. Five days is necessary to re-
generate five per cent. of hæmoglobin, in
which age and sex also play a *rôle*. In the
case of subcutaneous hemorrhage, the regen-
eration occurs no later. A loss of blood when
the hæmoglobin sank below twenty per cent.
produced death by collapse. By a knowledge
of these figures one may approximately judge

if a man is in condition for an operation. Chloroform, however, undoubtedly lessens the hæmoglobin, which is, perhaps, a matter of importance in the question of narcotization (ether?). In the case of tubercular patients, the blood was completely regenerated. Only in ten cases did it fail in this, and here the disease had not been removed. Malignant tumors give the same results. Here we may have important clues to operation.

Gluck (Berlin) spoke of the positive results he had obtained by sutures and plastic work on connective tissue, and of the absorbable and living tampons for surgical purposes. He uses catgut for tendons and nerves, ivory-pegs for bones; as absorbable tampons, catgut, silk, decalcified bone; as living tampons, pieces of sponge, lipomata, fresh coagula from animals.

Notes and Queries.

THE TENTH INTERNATIONAL MEDICAL CONGRESS.

We have received the following invitation to the Tenth International Medical Congress, with the request to lay it before our readers, assuring them that they will receive a hearty welcome in Berlin. The Congress promises to prove of inestimable value in its educational results and in securing the ties of international professional brotherhood.

It is most important that the American profession should participate both in its labors and in its fruits. Delegates of American medical societies and institutions and individual members of the profession will be admitted on equal terms. The Committee of Organization have appointed the following gentlemen as members of an American committee, for the purpose of enlisting the sympathy and co operation of the American profession:

S. C. Busey, Washington, D. C.; Wm. H. Draper, New York; R. H. Fitz, Boston, Mass.; H. Hun, Albany, N. Y.; A. Jacobi, New York; Wm. T. Lusk, New York; Wm. Osler, Boston, Mass.; Wm. Pepper, Philadelphia, Pa.; J. Peyre Porcher, Charleston, S. C.; J. Stewart, Montreal, Canada.

INVITATION TO THE TENTH INTERNATIONAL MEDICAL CONGRESS.

In accordance with the decision of the Ninth Congress at Washington, the Tenth International Medical Congress will be held at Berlin from the 4th to the 9th of Aug[ust] 1890.

By the delegates of the German med[ical] faculties and the chief medical societie[s] the German empire, the undersigned h[ave] been appointed members of the Gen[eral] Committee on Organization. A special c[om]mittee on organization has also been a[p]pointed for each of the different sections, arrange the scientific problems to be d[is]cussed at the meetings of the respective s[ec]tions. An International Medical and Sci[en]tific Exhibition will also be held by t[he] Congress.

We have the honor to inform you of t[he] above decisions, and at the same time to c[or]dially invite your attendance at the Congr[ess]. We should esteem it a favor if you wo[uld] kindly extend this invitation to your frie[nds] in medical circles, as may offer.

We beg to accompany our invitation b[y] copy of the statutes and programme, as a[lso] a list of the intended sections and their spe[cial] committees on organization.

Dr. Rudolf Virchow, *President;* Dr. [von] Bergmann, Dr. Leyden, Dr. Waldeyer, *Vice-Presidents;* Dr. Lassar, *General Secretary.*

All communications must be directed t[o] the General Secretary, Berlin N. W., K[arl]strasse 19.

REGULATIONS AND PROGRAMME.

I. The Tenth International Medical Co[n]gress will be opened in Berlin on Monda[y] August 4, 1890, and will be closed on Satu[r]day, August 9.

II. The Congress shall consist of legal[ly] qualified medical men who have inscribe[d] themselves as members and have paid f[or] their card of membership. Other men [of] science who interest themselves in the wo[rk] of the Congress may be admitted as extraor[di]nary members.

Those who take part in the Congress sha[ll] pay a subscription of 20 marks (£1 or $5) on being enrolled as members. For this su[m] they shall receive a copy of the *Transactio[ns]* as soon as they appear. The enrolme[nt] shall take place at the beginning of the Co[n]gress. Gentlemen may, however, be en[-]rolled as members by sending the amount o[f] the subscription to the Treasurer* with the[ir] name, professional status, and residence ap[-]pended.

III. The object of the Congress is an ex[-]clusively scientific one.

* Treasurer's address: Dr. M. Bartels, Berlin S. W. Leipzigerstrasse 75. Please enclose a visiting-card.

IV. The work of the Congress will be discharged by eighteen different Sections. The members shall declare upon enrolment to which Section or Sections they intend more particularly to attach themselves.

V. The Committee on Organization shall, at the opening sitting of the Congress, suggest the election of a definite committee (or bureau), which shall consist of a president, three vice-presidents, and of a number (as yet undetermined) of honorary presidents and secretaries.

At the first meeting of each Section a president and a certain number of honorary presidents shall be elected; these latter shall conduct the business of the Sections in turn with the presidents.

On account of the different languages employed, a suitable number of secretaries shall be chosen from among the foreign members. The duties of the foreign secretaries shall be confined to the meetings of the Congress.

After the termination of the Congress the printing of the *Transactions* shall be carried out by a committee especially appointed for this purpose.

VI. The Congress will assemble daily, either for a general meeting or for the labors of the different Sections.

The general meetings will be held between seven and two o'clock. Three such meetings will take place.

The time for the meetings of the various Sections will be fixed by the special committee of each Section, it being understood, however, that no such meetings are to take place during the hours allotted to the general meetings.

Joint meetings of two or more Sections may be held, provided that the Bureau of the Congress can offer suitable rooms for such meetings.

VII. The general meetings shall be devoted to (*a*) transactions connected with the work and general management of the Congress; (*b*) addresses and communications of general interest.

VIII. Addresses in the general meetings, as well as in any extraordinary meetings which may be determined upon, can only be given by those who have been especially requested by the Committee on Organization.

IX. In the meetings of the Sections, questions and problems will be discussed which have been agreed upon by the special committees on organization. The communications of those appointed by the committee to report on a subject shall form the basis of discussion. As far as time allows, other communications or proposals, proceeding from members and sanctioned by the Committee on Organization, may also be introduced for discussion. The bureau of each Section decides as to the acceptance of such offered communications, and as to the order in which they shall come before the meeting, always provided that this point has not been already determined in the meeting itself by a decree of the Section.

Scientific questions shall not be put to a vote.

X. Introductory addresses in the Sections must, as a rule, not exceed *twenty minutes in length*. In the discussions no more than *ten minutes* are allowed to each speaker.

XI. All addresses and papers in the general and sectional meetings must be handed over to the secretaries in writing before the end of the meeting. The Editorial Committee shall decide whether—and to what extent—these written contributions shall be included in the printed *Transactions of the Congress*. The members who have taken part in the discussions will be requested to hand over to the secretaries, before the end of the day, in writing, the substance of their remarks.

XII. The official languages of all the meetings shall be German, English, and French. The regulations, the programme, and the addenda for the day will be printed in all three languages.

It will, however, be allowable to make use of other languages than the above for brief remarks, always provided that one of the members present is ready to translate such remarks into one of the official languages.

XIII. The acting president shall conduct the business of each meeting according to the parliamentary rules generally accepted in deliberative assemblies.

XIV. Medical students and other persons, ladies and gentlemen who are not physicians, but who take a special interest in the work of a particular meeting, may be invited by the President or be allowed to attend the meeting by special permission.

XV. Communications or inquiries regarding the business of separate Sections must be addressed to the managing members thereof. All other communications and inquiries must be directed to the General Secretary, Dr. Lassar, Berlin N. W., 19 Karl Strasse.

SPECIAL SECTIONS.—COMMITTEES ON ORGANIZATION.

(The names which appear in *italics* are those of the managing members.)

1. *Anatomy.*—Flemming, Kiel; Hasse, Breslau; *Hertwig*, Berlin W., Maassen Strasse, 34; His, Leipsic; Von Kölliker, Würzburg; Kupffer, München; Merkel, Göttingen; Schwalbe, Strassburg; Wiedersheim, Freiburg.

2. *Physiology and Physiological Chemistry.*—Bernstein, Halle; Biedermann, Jena; *Du Bois-Reymond*, Berlin W., Neue Wilhelm Strasse, 15; Heidenhain, Breslau; Hensen, Kiel; Hüfner, Tübingen; Hoppe-Seyler, Strassburg; H. Munk, Berlin; Voit, München.

3. *General Pathology and Pathological Anatomy.*—Arnold, Heidelberg; Bollinger, München; Grawitz, Greifswald; Heller, Kiel; Ponfick, Breslau; Von Recklinghausen, Strassburg; *Virchow*, Berlin W., Schelling Strasse, 10; Weigert, Frankfort-on-the-Main; Zenker, Erlangen.

4. *Pharmacology.*—Binz, Bonn; Böhm, Leipsic; Filehne, Breslau; Jaffé, Königsberg; *Liebreich*, Berlin N. W., Dorotheen Strasse, 34 a; Marmé, Göttingen; Penzoldt, Erlangen; Schmiedeberg, Strassburg; Hugo Schulz, Greifswald.

5. *Internal Medicine.*—Biermer, Breslau; Gerhardt, Berlin; Leube, Würzburg; *Leyden*, Berlin W., Thiergarten Strasse, 14; Lichtheim, Königsberg; Liebermeister, Tübingen; Mosler, Greifswald: Naunyn, Strassburg; Von Ziemssen, München.

6. *Diseases of Children.*—Baginsky, Berlin; *Henoch*, Berlin W., Bellevue Strasse, 8; Heubner, Leipsic; Kohts, Strassburg; Krabler, Greifswald; Ranke, München; Rehn, Frankfort-on-the-Main; Soltmann, Breslau; Steffen, Stettin.

7. *Surgery.*—Bardeleben, Berlin; *Von Bergmann*, Berlin N. W., Alexander Ufer, 1; Czerny, Heidelberg; König, Göttingen; Von Lotzbeck, München; Schede, Hamburg; C. Thiersch, Leipsic; Trendelenburg, Bonn; Wagner, Königshütte.

8. *Obstetrics and Gynæcology.*—Fritsch, Breslau; Gusserow, Berlin; Hegar, Freiburg; Hofmeyer, Würzburg; Kaltenbach, Halle; Löhlein, Giessen; *Martin*, Berlin N. W., Moltke Strasse, 2; Olshausen, Berlin; Winckel, München.

9. *Neuralgia and Psychiatry.*—Binswanger, Jena; Emminghaus, Freiburg; Erb, Heidelberg; Flechsig, Leipsic; Fürstner, Heidelberg; Grashey, München; Hitzig, H
Jolly, Strassburg; *Laehr*, Berlin-Zel
dorf.

10. *Ophthalmology.*—O. Becker, He
berg; Eversbuch, Erlangen; Von
pel, Giessen; Hirschberg, Berlin; L
Göttingen; Michel, Würzburg; Schs
Rimpler, Marburg; *Schweigger*, B
N. W., Roon Strasse, 6; Von Zehe
Rostock.

11. *Otology.*—Bezold, München; Bürk
Göttingen; Kirchner, Würzburg; K
Strassburg; Kessel, Jena; *Lucae*, Berlin
Lützowplatz, 9; Magnus, Königsberg; M
Heidelberg; Trautmann, Berlin.

12. *Laryngology and Rhinology.*—Besc
ner, Dresden; *B. Fraenkel*, Berlin N.
Neustädtische Kirch Strasse, 12; Gott
Breslau; A. Hartmann, Berlin; Jurasz,
delberg; H. Krause, Berlin; Michael, H
burg; Schech, München; M. Schm
Frankfort-on-the-Main.

13. *Dermatology and Syphiligraphy.*—G
pary, Königsberg; Doutrelepont, Bo
Köbner, Berlin; *Lassar*, Berlin N. W., G
Strasse, 19; Lesser, Leipsic; G. Lewin,
lin; Neisser, Breslau; Unna, Hamb
Wolff, Strassburg.

14. *Diseases of the Teeth.*—*Busch*, B
N. W., Alexander Ufer, 6; Calais, Hamb
Hesse, Leipsic; Fricke, Kiel; Holländ
Halle; Müller, Berlin; Partsch, Bres
Sauer, Berlin; Weil, München.

15. *Hygiene.*—Flügge, Breslau; Ga
Giessen; Graf, Elberfeld; F. Hofm
Leipsic; R. Koch, Berlin; Lehmann, W
burg; *Pistor*, Berlin W., Von der He
Strasse, 13; Wolffhügel, Göttingen; U
mann, Rostock.

16. *Medical Geography and Climat*
(*History and Statistics*).—Abel, Stet
Brock, Berlin; Dettweiler, Falkenstein;
kenstein, Lichterfelde; Finkelnburg, Bo
Guttstadt, Berlin; *A. Hirsch*, Berlin
Potsdamer Strasse, 113; Lent, Köln; W
nich, Cöslin.

17. *State Medicine.*—Falk, Berlin; G
ther, Dresden; Von Hölder, Stuttg
Knauff, Heidelberg; *Liman*, Berlin S.
Königgrätzer Strasse, 46 a; Schönfeld, B
lin; Schwars, Köln; Skrzecka, Berlin;
gar, Bonn.

18. *Military Hygiene.*—Von Coler, Ber
Von Fichte, Stuttgart; Grasnick, Ber
Grossheim, Berlin; *Krocker*, Berlin
Magdeburger Platz, 3; Mehlhausen, Ber
Mohr, München; Roth, Dresden; We
Berlin.

THE HYPNOTIC EFFECT OF WARM BANDAGES.

Warm baths, as is well known, produce soothing effect, and tend to produce sleep, ALLDORFER has attempted to apply such method in patients where a sedative effect desired and yet where a bath is inapplicable. His method consists in wrapping the lumbar region and belly with linen cloths wrung in warm water, and then covering them with oiled silk or rubber-cloth, so as to prevent evaporation, while the whole is held in place and loss of heat prevented by a flannel cloth.

This procedure is of ready performance, and the author says that by this simple means he has obtained the most astonishing results in the treatment of insomnia.—*Journal de Médecine de Paris*, March 9, 1890.

FATAL PODOPHYLLIN-POISONING.

In the *Medical Record* for April 12, 1890, Dr. W. H. DUDLEY reports that he was recently called in the middle of the night to see Mrs. —, aged 60, and found her in the following condition: Face, feet, and hands quite cold; cold perspiration standing on face; pulse 60, quite weak and thready; respiration sighing, and speaks with difficulty. That she took some mandrake the evening before, and soon afterwards (about 10 P.M.) commenced vomiting and purging, which continued to the present. Both vomited matter and stools contained bile. Two hours after the vomiting and purging had ceased, the pulse rose to 70 per minute, the hands and feet getting warm, respirations were natural, and the patient expressed herself as being comparatively comfortable. About seven o'clock in the morning the patient felt so far recovered that she arose and dressed, but soon lay down, feeling quite depressed. Her mind now showed aberration and memory of recent events defective. Seen at 3 P.M.: primary symptoms of depression returned, but no purging or vomiting.

At 9 P.M. of the same day (about twenty-four hours after taking the podophyllin) the patient was comatose; pulse, 100 to the minute, full, soft, and compressible; temperature, 100+° F.; pupils slightly contracted; respiration, 38. The hand applied to the surface would suggest a higher temperature than is shown by the thermometer.

From this time till 4 A.M. of the morning of the 14th there was a gradual decline. Occasionally she would arouse sufficiently to take food and remedies, but was for the most part comatose. The urine had to be drawn, and was found to be smoky in color; specific gravity, 1.020, acid; albumen, one-eighth volume after standing; microscope showed large quantities of blood-cells, but no casts were discovered. In this case there was an error in the patient's dose. She supposed she was taking mandrake, while she took its resinoid,—podophyllin. The quantity taken, as shown by the patient before her mind became clouded, was found to weigh about five grains. In this case the treatment consisted of, at first, morphine, ⅛ grain, followed by small quantities of whiskey; later, of food and stimulants, as it was possible to exhibit them.

The primary symptoms of poisoning were removed rather promptly when the condition of the patient promised recovery, but those developing later showed an unrecorded secondary action, which would suggest that the liver had been stimulated to the production of a large amount of cholic, choleic, taurocholic, or glycocholic acid, the effect of which was to bring about a condition similar to that of cholæmia, minus the jaundice, a symptom absent throughout the duration of the illness,—about eighty hours. No post-mortem was obtained. It should be stated that the husband of the patient took a similar dose of the same drug, and suffered primarily in about the same manner as his wife, though in a minor degree, which was followed by a depressed condition for two or three weeks; but he finally recovered, and has since enjoyed his usual health.

DRAINAGE OF THE PERITONEUM.

Dr. DELBET discusses this subject at great length in the *Annales de Gynécologie* for February. He compares drainage by means of large tubes with capillary drainage, effected by iodoform gauze or some similar agent. As the result of clinical and anatomical experience, he concludes that capillary drainage alone can insure the escape of liquids secreted during the first hours after operation. All forms of drain, tubes, or gauze alike become rapidly surrounded by adhesions, and thus, as in the case of *tamponnement*, they may cause a dangerous focus of infection to become practically extraperitoneal. To that result he believes the efficacy of drainage to be principally due. The capillary drainage

of Mikulicz is effected by packing Douglas's pouch with iodoform gauze. That authority specially recommends his method in cases where a large cavity is left, at the lower part of the abdominal wound, not to be closed by sutures. The gauze, he believes, acts as a hæmostatic plug, prevents the entry of septic germs, drains most efficaciously by capillary attraction, and, by promoting adhesions in the surrounding structures, cuts off the cavity from the rest of the peritoneum. M. Pozzi combines the two methods of drainage. He packs the cavity with the gauze, in the centre of which a drainage-tube is inserted, and prevents the retention of liquid too thick to filter through the gauze. Dr. Delbet finds that by drainage with a glass tube very little fluid can be evacuated even by aspiration by means of a syringe. If a litre of water be poured into Douglas's pouch into which a glass drainage-tube of the usual form is inserted, hardly a drop of water can be removed by means of a rubber tube attached to a glass syringe and introduced into the glass drain. In fact, according to this experiment, drainage, after the manner practised and advocated by so many well known British operators, is useless. Yet the system of Mikulicz is little practised in the United Kingdom, while results prove that glass tube drainage is admirably efficacious. However aspiration by tube and syringe may fail in experiments, it succeeds in removing ounces of fluid after operations. —*British Medical Journal*, March 22, 1890.

THE VALUE OF TRICHLORACETIC ACID AS A TEST FOR ALBUMEN IN THE URINE.

The practical value of trichloracetic acid as a test for albumen in urine has been further investigated by Dr. D. M. Reese (*Johns Hopkins Hospital Bulletin*, No. 3), since the publication of a note on the subject last November. Dr. Reese fully confirms the statement that trichloracetic acid precipitates not only the albumen ordinarily found in urine, but also an albumen occasionally present, which is dissolved by acetic acid. In fourteen out of eighty-seven different specimens of urine he obtained a precipitate with trichloracetic acid, and not with nitric or picric acids, or heat and acetic acid. What gives his paper special interest is that in eleven of these fourteen cases granular, epithelial, or hyaline casts were found, and in three of these eleven cases the necropsy showed distinct changes in the kidneys. He concl that trichloracetic acid is a most delicat for albumen in urine, prompt in action, applied, and worthy of extended use.

WESTERN PENNSYLVANIA MEDIC COLLEGE.

The fourth annual commencement cises of the Western Pennsylvania Me College were held in the Grand O House, Pittsburg, on March 27; the d of M.D. was conferred on twenty-nine uates, being about twenty-five per ce the class in attendance during the past t

In the evening of the same day the Al Association of the college, now numb one hundred and twenty, was entertain the faculty at a banquet provided at Seventh Avenue Hotel.

OPERATIONS ON THE PROSTATE GL

Dr. Wm. T. Belfield, 612 Opera H Building, Chicago, Ill., U. S. A., so information concerning unpublished ca operations upon the prostate, especially the relief of the so-called hypertroph the organ.

The information is desired to cover following points:

Date; age of patient; previous us catheter; complications (stone, etc.); n of operation; immediate result; subseq history; operator (reporter).

The operations about which informati requested are:

1. Suprapubic prostatectomy.
2. Perineal prostatotomy.
3. Mercier's or Bottini's operation.
4. Incidental removal of portions of p tate in operations for stone, etc.
5. Institution of artificial urinary cha in cases of prostatic obstruction.
6. Operations for malignant or tuberc disease of prostate or bladder.
7. Operations on seminal vesicles.
8. If suprapubic operation, whether bl der wound was left open or sutured; whet special incision for drainage was made; what extent bladder was distended or tensible; whether rectal bag was us whether peritoneum was injured.

The source of information will, of co in every instance be printed.

WILLIAM F. JENKS MEMORIAL PRIZE.

second triennial prize, of four hun-
and fifty dollars, under the deed of
of Mrs. William F. Jenks, will be
ed to the author of the best essay on
Symptomatology and Treatment of
rvous Disorders following the Acute
ious Diseases of Infancy and Child-

conditions annexed by the founder of
ize are, that the "prize or award must
be for some subject connected with
ics, or the diseases of women, or the
s of children;" and that "the trustees,
this deed for the time being, can, in
iscretion, publish the successful essay,
paper written upon any subject for
they may offer a reward, provided
come in their hands may, in their
ent, be sufficient for that purpose, and
ay or paper be considered by them
of publication. If published, the dis-
ion of said essay shall be entirely
the control of said trustees. In case
o not publish the said essay or paper,
be the property of the College of
ans of Philadelphia."

prize is open for competition to the
world, but the essay must be the pro-
n of a single person.

essay, which must be written in the
h language, or, if in a foreign lan-
, accompanied by an English transla-
hould be sent to the College of Physi-
of Philadelphia, Pa., U. S. A., before
y 1, 1892, addressed to Louis Starr,
, chairman of the William F. Jenks
Committee.

ch essay must be distinguished by a
, and accompanied by a sealed en-
e bearing the same motto, and con-
g the name and address of the writer.
velope will be opened except that
accompanies the successful essay.

committee will return the unsuccessful
if reclaimed by their respective writers,
ir agents, within one year.

e committee reserves the right not to
an award if no essay submitted is con-
d worthy of the prize.

DANGERS OF CANNABIS INDICA.

e therapeutical effects of Indian hemp
ften very valuable, but the drug has
into disfavor on account of the inequal-
ity of its action. Doses which, on one occasion, are well borne, and afford considerable relief, at other times give rise to symptoms of poisoning, and practitioners naturally hesitate to make use of a drug which, however valuable when they happen to hit the mark, may get them into trouble. It seems that this apparent waywardness is due to the fact that the active principles vary in different specimens of the plant from year to year, so that the actual degree of potency is always somewhat uncertain. Comparatively little is known of the chemical nature of these active principles, and their examination opens up a wide field for research. In the mean time the valuable sedative properties of the drug may be obtained without danger of overstepping the limit by employing only small doses to begin with. As soon as the strength of the preparation and the susceptibility of the patient have been measured in this way, the dose can be rapidly and successively increased until the desired effect is produced.—*Medical Press and Circular*, April 16, 1890.

BEHAVIOR OF THE PUPILS IN EPILEPTICS.

M. CHARPENTIER (*Revue Générale de Clinique et de Thérapeutique*, No. 6) directs attention to what he considers to be a peculiarity in the behavior of the pupils among epileptics. Inequality of the pupils may be no sign of disease, other than perhaps some variation in the refractive media of the eye, but it is also a common indication of general paralysis, of the post-epileptic state, or associated often with facial neuralgia and migraine, and with affections involving the sympathetic. But in all these instances the inequality is more or less permanent. The condition he desires to note is a rapid, transient, and variable difference in the size of the two pupils, somewhat resembling the temporary inequality produced by closing one eye for a short time and then suddenly opening it. The phenomenon is produced sometimes at very short intervals in the same subject; it is unconnected with any fit or vertigo, or other symptom of epilepsy, and it has no prodromal significance; but it would appear to be liable to be evoked in any epileptic when he is under the influence of emotion, especially if he has a difficulty in expressing himself. M. Charpentier has not seen it occur apart from emotional disturbance and effort, and so far has only noticed it to be a dilatation of

the pupil, progressively increasing or alternately dilating and contracting. He thinks that if these observations are confirmed by others, the sign may be of value as revealing the existence of the epileptic neurosis.—*Lancet*, February 15, 1890.

BROMIDE OF GOLD IN EPILEPSY.

Following up the observations of Bourneville, Dauge, and Goubert, on the treatment of epilepsy by bromide of gold, several Russian physicians have made trial of this drug in various affections of the nervous system. Professor Merzheëvski, having a very obstinate case of hysteria, which had resisted all the usual remedies, prescribed bromide of gold in ¼-grain doses, and afterwards in ½-grain doses, with marked effect, the patient feeling much better and the hysterical attacks becoming far milder and less frequent. Dr. Rozenbach also—having tried bromide of potassium unsuccessfully in half a dozen cases of hysteria—ordered bromide of gold; during the first week the attacks became less frequent. Immediately after the drug was commenced, the sensibility of the mouth became deadened, but that was the only symptom of bromism which occurred. Again, Dr. Danillo prescribed bromide of gold in eight cases of epilepsy, ordering at first four pills, each containing ⅛ of a grain, and afterwards from twelve to sixteen of these pills per diem. No symptoms of bromism, with the exception of some anæsthesia of the mouth, were produced. In five cases there was more or less improvement; in one of these the fits became reduced in degree to the level of *petit mal;* in another, where the patient was a girl of 14, the fits, which had formerly occurred once or twice a week, were completely stopped, and four months afterwards there had been no return; in three cases the fits became weaker and less frequent. Over the remaining three of the eight cases, the bromide of gold appeared to exert no influence. Dr. Shcherbak has recently published in the *Vrach* an account of some laboratory experiments made with the view of ascertaining the proper dose of bromide of gold, and also of comparing its action with that of other better-known bromides. The drug was administered in three ways,—by intravenous injection, by hypodermic injection, and through the œsophageal tube into the stomach. It was found that artificially-induced epileptiform attacks could be averted by the intravenous injection of .003 gramme per kilogramme of body- larger doses being needed in hypoder ministration (viz., .09 to .16 gramme by the stomach the attacks were not prevented unless from .1 to .2 gram kilogramme of body-weight was e On the whole, it appeared that bro gold is decidedly more active wei weight than the more commonly us mides, probably in the proportion of Its price is about three shillings for grains, so that, taking one grain as t nary dose for an adult, it can hardly sidered an exceptionally expensive dr is readily soluble in water, and the s if not exposed to light, keeps very *Lancet*, April 19, 1890.

VOMITING IN THE LATER MONTH PREGNANCY.

At the meeting of the Obstetrical of Glasgow, held March 26, 1890, Dr (Partick) read a paper on two cases of vomiting in the later months of pregna sociated with hemialbumosuria and ria, in which he stated that these co of the urine had not been previously ob in pregnancy. In the first case, the v was associated with marked pigmenta the skin, and in the second, in which of the convulsive form, with slight ja The propeptone or hemialbumose w tected in the ordinary way,—name carefully adding a mineral acid and h This treatment of the urine in both gave a flocculent precipitate, which peared on boiling, but reappeared urine cooled. In the second case, the were also precipitated by the test, but were readily distinguished by the low perature at which they disappeared on ing. The urine in this case further deep purple-red color with ferric ch indicating the presence of ethyl-d acid; not only so, but the same reactio also obtained at first in the distillate acidulating with hydrochloric acid, th parently being the first time this has bee served, a fact which Dr. Kirk was inclin attribute to the large quantity of the present in this case. Both patients treated by chloral hydrate, and subseq by sodium salicylate (the diaceturia wa served before the latter or any drug w ministered). In both the abnormal s the urine ceased within eight days an

re generally much improved. Dr. Kirk ther drew attention to the great viscidity frothing power developed in the urine ferric chloride, and to the light which this d on the styptic power of this substance. next referred to cases of jaundice from truction and functional disturbance, in ch he had also observed the occurrence hemialbumosuria and diaceturia (singly or h together), and said that although these es of the urine had been often observed the same class of cases, he was not aware their coexistence in any single case having n previously pointed out, an occurrence ich, nevertheless, he believed must be not common.—*British Medical Journal*, April , 1890.

YPODERMIC INJECTIONS OF CHLORODYNE IN DIARRHŒA.

Dr. Cimbali, of Rome, writing in the *iforma Medicæ* (*Lancet*, April 19, 1890) rearks that in serious forms of certain malaes (as, for example, enteric fever, pneumo, malaria, etc.), an uncontrollable kind of rrhœa sometimes occurs, which, besides ing a great annoyance to the patient, alys aggravates his condition. This profuse rrhœa, in which the stools amount to enty or thirty per diem, is usually met h in severe adynamic forms of infectious eases, and is, moreover, a sign of a highly fectious condition. It is impossible to oderate it either by astringents or by the rongest excitants. In many cases, however, he has successfully employed hypodermic injections of chlorodyne. 15 grains of hlorodyne are injected, and if this is insufficient, the injection can be repeated five or ix hours later, unless it is one of those diarhœas which is the immediate forerunner of he death agony. As a rule, however, after he first injection of chlorodyne, the number f stools rapidly diminishes, and the patient xperiences great relief. Two or three injections during the twenty-four hours suffice to check, or, at least, to moderate them.

A SIMPLE TREATMENT FOR CROUP.

According to the Paris correspondent of the *Medical Press and Circular* (April 16, 1890), a doctor from Toulouse asserts that he has had considerable success in the treatment of the above terrible affection by employing a tablespoonful of common sulphur in a glass of water, given by tablespoonfuls every two hours, the mixture being previously stirred. Sulphur is certainly not a new remedy for croup or diphtheria; on the contrary, it is as "old as the hills," but the simple method mentioned may be tried by any one, and worth recording, perhaps.

WINDOW-PANE BAROMETER.

A pretty use of cobalt and nickel salts, which, as is well known, are affected by changes in the amount of moisture in the air, and which change they indicate by exhibiting different colors, is suggested by Rueckert in the *Rep. Annal Chem.* If window-panes, or wall-paper, or the like, are painted with the following solutions: 1. Chloride cobalt, 1; gelatin, 10; and water, 100. 2. Chloride copper, 1; gelatin, 10; and water, 100. 3. Chloride cobalt, 1; gelatin, 20; water, 200; nickel oxide, .75; chloride copper, .25, they will be colorless in damp weather. In clear weather, solution No. 1 will give blue color, No. 2 yellow, and No. 3 green.—*Weekly Medical Review*, April 26, 1890.

THE TREATMENT OF ADDISON'S DISEASE.

In order to possess a rational method of treatment of any morbid process, it is, of course, necessary that the causes and pathogenesis of that process be recognized. In the case of Addison's disease, however, we are almost totally ignorant as to these data, for even autopsies do not give the same results. Most frequently post-mortem examination shows an implication of the suprarenal capsules. In some tuberculosis of these glands is recognized, in others simple inflammation with pigmentation, while in others, perhaps, there will be simple amyloid and caseous degeneration, or, finally, echinococci may be recognized. Sometimes, even, we find that in both capsules we have illustrations of a number of these different processes. Sometimes we have the disease confined to a single capsule and to a single form of pathological process; again, occasionally it is found that the suprarenal capsules are perfectly normal, while the semilunar ganglia of the cæliac plexus is the seat of pigmentary atrophy, or other degenerative process; while, again, post-mortem examination may yield only negative results, and no lesion of the suprarenal capsules or of the sympathetic ganglia

be discoverable. It is thus explainable how various authors have attributed the symptoms of Addison's disease not to the disturbed function of the suprarenal capsules, but to the alteration of the sympathetic or to some unrecognizable blood alteration. In the *Zeitschrift für Therapie* for April 1, 1890, PROFESSOR CANTANI publishes a short paper in regard to the nature and treatment of Addison's disease. The author is rather inclined to accept, as offering the most probable explanation of the clinical symptoms of this disease, the theory that the symptoms point to an implication of the suprarenal capsules, though he admits that several objections may be offered to this view. First, the extirpation of the glands in dogs produces no symptoms of Addison's disease; and, second, frequently in post-mortems of undoubtedly Addison's disease the suprarenal capsules were found unchanged. The author, however, does not admit that these objections are unanswerable, for he claims that in cases where the suprarenal capsules do not appear to have undergone any change, careful examination with the microscope might serve to reveal considerable alteration. On the other hand, he claims that the negative result of experiments is likewise of little force, since these experiments were made on dogs, in whom, perhaps, the suprarenal capsules do not possess the same function as in man. The prognosis is almost invariably unfavorable, although cases may, perhaps, drag out their existence for several months or perhaps several years. This fact, of course, shows us that our therapeutic measures are extremely unsatisfactory, and we are, therefore, restricted to the combating of the symptoms as they arise, and labor to improve the general nutritive condition. Hygiene and diet are, consequently, the most important elements in treatment, although the judicious use of remedies, such as quinine, Fowler's solution, iron, and phosphates in some cases prove of service. When violent vomiting is present, morphine should be used, with extract of belladonna. Where there is marked prostration, ether will prove of service, or lemonade of lactic or hydrochloric acids will prove of service. The nervous system especially appears to be the seat of intense exhaustion. Many other remedies have been tested in this disease, such as iodine and bromine salts, but Cantani has found that while the first are, perhaps, permissible, the latter are either useless or may be even harmful.

As regards electricity to the abdominal sympathetic, so frequently recommend[ed] the author acknowledges that nothing [ex]cept danger may be expected from it.

BACTERICIDES.

According to the Vienna correspondent [of] the *Medical Press and Circular* (April [5], 1890) PROFESSOR FODOR contributed an al[so] paper this week at the Buda-Pesth Surgi[cal] Society on "Bacteria," which was largely [an] exposition of his own experiments on the m[i]crobes. The first part of his paper was d[e]voted to the splenic fever bacilli in the blo[od] of animals, after vaccination. The anthr[ax] bacilli in defibrinated arterial blood rapid[ly] died, as they also did in venous blood, a[nd] more particularly in fresh blood than in bloo[d] that had stood for some hours. The blood after being three times frozen, had an injur[i]ous effect on the bacilli. Between 40° a[nd] 42° C. the blood was favorable for the cult[i]vation of the bacilli, but when the temper[a]ture was raised to 43° the anthrax bac[illi] died in great numbers. Another mode [of] experimenting on the blood was by injecti[ng] different substances into the stomachs [of] dogs. He injected hydrochloric acid, t[ar]taric acid (3 to 5 grammes), quinine (.6 to [1] gramme), and the blood was not observed [to] have any injurious effect on the bacilli, whi[ch] ought to be carefully noted by all practisi[ng] medicine, as quinine is specially valued f[or] this reputed value in the blood. The chl[o]ride of sodium (3 to 5 grammes), on th[e] other hand, had a powerful effect of conve[r]ing the blood into a powerful bactericid[e]. All the alkalies rendered the blood pro[tec]against the growth of bacteria; while lar[ge] doses had the effect of immediately destro[y]ing a large number of the micro-organisms which he observed in the following order: Ammonium carbonate (2 to 5 grammes) twenty-seven per cent. before injection and thirty-eight per cent. after injection; phosphate of sodium, thirty-two per cent. before and sixty per cent. after injection; carbonate of sodium, twenty-three per cent. before and seventy-six per cent. after; carbonate of potassium, forty-eight per cent. before and seventy-seven per cent. after; bicarbonate of sodium, twenty-nine per cent. before and eighty-three per cent. after injection. He then tried the resistance that injections of alkalies had on the virus of anthrax by vaccinating dogs with the virus. Nineteen dog

re treated with bicarbonate of sodium and ht without; the eight vaccinated without ng the bicarbonate of sodium were with- t exception affected with anthrax; out of e nineteen treated with bicarbonate of so- m, only three could be observed to have e bacilli in the blood. He concluded by pressing his conviction that large doses of e bicarbonate of sodium was the most pow- ul destructive agent for resisting anthrax fection; and that where infection had en place, subcutaneous injections of the arbonate of sodium would be the most ctual treatment for anthrax. Although has not yet been tried with the human od, he has strong convictions that it will ve efficacious, which he promises to try on e first occasion.

THE PHYSIOLOGICAL PROPERTIES OF THE KOLA NUT.

We have already in previous issues of the ZETTE called attention to the value of e kola nut in reducing tissue-change, and similarity of action in this respect to the h coco-leaves. At a meeting of the demie de Médecine, held April 8, 1890 *Tribune Médicale*, April 10, 1890), DR. HECKEL read a paper on this subject, in ich he claims that, even after the extrac- n of the caffeine by chloroform, his experi- ents have shown him that the powder of e kola nut still possesses marked proper- es, especially exerted on the muscular tissue d on nervous excitability. He states that e red substance noted by Sée in his work the African kola, and which remains in e nut after extraction with chloroform, is a ighly complex body, in which the active rinciples are still to be found, although he as not yet succeeded in isolating them.

The negroes in tropical Africa are able to ake a march in one day of more than forty iles, living simply on a single fresh kola ut, and Heckel claims that he has obtained himself equally surprising results through the se of the dry kola. He states that two offi- cers stationed at Perpignan in 1888 made the ascent of Mount Canigou (nearly nine thousand feet in height), and walked for twelve hours without fatigue, resting only for about twenty to twenty-five minutes in all that time, eating only a small quantity of kola, corresponding to about two grains of caf- ine. After this prolonged exertion, the muscular power did not seem to be de- pressed, and Heckel states that numerous other officers and soldiers have been able to undergo severe and sustained muscular effort without feeling fatigue while under the influ- ence of small quantities of kola nut. Further, he states, that several officers of the infantry regiment, on the 11th of July, 1888, in fifteen and a half hours, walked nearly forty miles, and during this time they likewise only con- sumed enough kola corresponding to a little over two grains of caffeine.

Heckel states that there are contained in the kola nut other principles than caffeine, which are of considerable value in this con- nection.

The author states that at his suggestion the French Alpine Club has adopted kola as a stimulant or nutrient in their mountain- climbing expeditions, and their general testi- mony is that it has rendered them the great- est service, especially in preventing loss of breath and in sustaining muscular strength.

THE TREATMENT OF DROPSY.

In the treatment or dropsy four methods are possible by which the organism may be relieved from the excess of water,—through the sweat-glands, the kidneys, the intestine, or by mechanical operation. In other words, by diaphoresis, diuresis, catharsis, or surgical operations. Of these different methods, the decision as to which is the most reliable has not yet been absolutely established, although most practitioners agree in the principle that cardiac dropsy is, in the first place, best treated with diuretics, while dropsy of ne- phritic origin is most amenable to the use of diaphoretics. PROFESSOR FÜRBRINGER re- cently delivered an address before the So- ciety for Internal Medicine in Berlin, of which the following represents the most im- portant points (*Wiener Medizinische Blätter*, April 17, 1890): Fürbringer maintained that dropsy of renal origin calls especially for the production of diaphoresis at first, and even the employment with diaphoretics of laxa- tives. In the production of diaphoresis, both in renal and cardiac dropsies, warm-water baths or wrapping of the body with hot wet sheets, were found most useful, which might with advantage be combined with Russian steam-baths. This latter procedure Für- bringer, however, stated was to be employed with extreme caution, especially in high de-

grees of weakness of the heart, dyspnœa, and pulmonary complications. Even in other cases the baths are apt to be very severe, and may produce palpitation of the heart, dizziness, etc. In cases in which there is marked suppression of the urine, which, by the way, nearly always terminate fatally, Fürbringer has failed to produce the slightest relief by the production of diaphoresis. Diaphoresis may likewise be produced by internal remedies, among the best of which is pilocarpine, although its use is liable to result in the production of dangerous heart weakness and increase of bronchitis, and even lead to the production of pneumonia or pulmonary œdema. Again, in many patients violent vomiting and collapse follow its employment, so that its constant employment as a diaphoretic should only be undertaken with the greatest caution and in cases which can be watched. As regards the second group of remedies,—the diuretics,—digitalis is regarded as by far the most reliable; in fact, it might almost be called a sovereign remedy in cardiac dropsy; also in renal dropsy complicated by some cardiac affection it may prove valuable. On the other hand, in acute and subacute glomerular nephritis, in which the retention of urine is attributable to a lesion of the kidneys themselves, digitalis will frequently fail. Even here Fürbringer notes that the vinegar of digitalis with the wine of pepsin will often be well borne, and will produce diuretic effects even when the tincture proves inefficacious. His experience with *Adonis vernalis*, sparteine, and convallarine have been extremely unsatisfactory, and he has now discarded their use as substances complicated by unfavorable after-effects. On the other hand, Fürbringer maintains that caffeine, or the new substance, diuretin (theobromine), and a combination of various vegetable alkalies are worthy of some confidence. As regards strophanthus and caffeine, he has found them to be the most reliable in cases of cardiac origin free from renal complication, and in certain cases of cardiac dropsy strophanthus and caffeine have succeeded even when digitalis has failed. Although such cases exist, they are to be regarded as rarities.

Calomel, according to Fürbringer, is, in some cases, an active diuretic, although it is apt to be unreliable, and, according to Fürbringer, should be the last refuge. It should invariably be avoided in cases of dropsy complicated by severe nephritis.

As regards surgical interference, capillary drainage seems to be preferable, although here also there is danger of gangrene and septic infection of the wound, resulting in erysipelas, abscess, etc.

Perhaps the best method, where mechanical interference is required, is obtained in the use of long and deep scarification, although here also great caution must be observed against infection.

ANTIMONY IN INFLAMMATIONS.

It was claimed by Dr. Spender, in the *Practitioner* for March, 1885, that antimony, in frequently-repeated small doses,—1/6 of a grain of tartar emetic,—has the power of completely dissipating early local inflammations. Acting on this suggestion, SURGEON-MAJOR E. LAWRIE writes in the *Practitioner* for April, 1890, that he has since then been using antimony in surgical inflammation in small doses frequently repeated, and he now regards it as quite as useful in arresting local inflammation as quinine is in malarial fever. He claims that it prevents and arrests inflammation, if this is not originated or kept up by a specific or septic cause. Mr. Lawrie believes that there must be more than the diaphoretic action in the effect which antimony in small, frequently repeated doses has upon inflammation. But it is not understood how it is that the well-known tolerance of antimony sets in after the drug has been administered several times, either in large or small doses, nor is it understood how it is that antimony increases the frequency of the heart's action.

The author states that in all inflammatory diseases which are not of a specific nature, antimony is always used in the Afzagunj Hospital. It may be given without fear of causing nausea and diarrhœa or depression, even in diseases where its use would appear to be contraindicated. For example, during the last year the writer employed it in the treatment of typhoid fever, and finds that it cuts the disease short with such certainty that it is almost doubtful whether the lesion of typhoid is specific or is not rather incidental or adventitious. In typhoid fever, no less than in mucous enteritis, the diarrhœa depends upon an inflammation of the intestine, and though at first sight it might be thought that antimony would increase the diarrhœa, it actually stops it.

The author administers it usually combined with cardiac tonics, and he claims that there are few cases of inflammation where its use will not be attended by benefit without any danger whatever of inducing depression.

—THE—

Therapeutic Gazette.

Whole Series, Vol. XIV. | DETROIT, MICH., PHILADELPHIA, PA., June 16, 1890. | Third Series, Vol. VI. No. 6.

CONTENTS.

Original Communications.

PAGE

Sources of Failure in the Use of Oxygen. By Samuel S. Wallian, A.M., M.D. ... 361
Treatment of Erysipelas of Trunk and Limbs by Means of Warm-Water Bath. By Dr. A. Rose. ... 365
Some Points in Negative Therapeutics. By G. Walter Barr, M.D. ... 368
Some Therapeutic Uses of Buttermilk By Stanley M. Ward, M.D. ... 369
A Case of Poisoning by Oil of Cedar. By R. M. Ellyson, M.D. ... 371
Tablet Triturates and Compressed Pills. By E. P. Hurd, M.D. ... 372

Leading Articles.

The Digestibility of Boiled Milk ... 374
A New Function of the Pancreas ... 376
Tablet Triturates and the Dispensing of Drugs by Physicians ... 377
Orexin as a Stomachic ... 377
Standardization in the New Pharmacopœia ... 378

Reports on Therapeutic Progress.

The Past and Present Treatment of Rheumatism ... 378
Hæmoglobin Compound, or Bullock's Blood in Therapeutics ... 380
The Treatment of Dropsy of Cardiac Origin with Calomel ... 381

PAGE

On the Present Position of Abdominal Surgery ... 387
The Value of Codeine ... 388
The Rational Treatment of Sciatica ... 390
The Anatomical Alterations in Chronic Sphacelin-Poisoning ... 391
Borax in Epilepsy ... 392
The Treatment of Flatulent Dyspepsia 392
The Discussion on Empyema at the Ninth Congress of Internal Medicine 393
Acute Diffuse Suppurative Peritonitis—Laparotomy—Recovery ... 395
The Treatment of Bright's Disease ... 396
The Empyreumatic Oil of Coffee or Caffeone ... 397
Gurjun Oil as an Expectorant ... 400
Intestinal Antisepsis ... 401
Some Dangers connected with the Circulatory Organs in Diphtheria ... 401
The Employment of Retinol and Colophane in the Treatment of Vaginitis ... 402
The Rapid Heart ... 403
The Administration of Insoluble Crystalline Substances ... 404
A Rapid Method of Cure of Abscess of the Liver ... 404
Salicylate of Mercury ... 406
The Influence of the Russian Steam Bath on the Elimination of Certain Drugs from the Organism of Healthy and Sick People ... 406
A Comparison between Salicin and Sodium Salicylate in Acute Rheumatism, and as to their Effect upon the Excretion of Uric Acid ... 408
Asepsis of Instruments employed in the Urethra ... 409
The Dangers of Constipation in Children ... 410
On Ouabaïne in Whooping-Cough ... 411
Therapeutics of Intestinal Absorption ... 412
The Dermatological Value of Sulpholeate of Sodium ... 413
Cocaine Anæsthesia in the Iodine Treatment of Hydrocele ... 415
The Innervation of the Heart ... 415
Chloride of Zinc in the Treatment of Uterine Catarrh ... 416
Antisepsin of Paramonobromacetanilide 416

PAGE

Glycerinum Saponatum ... 416
The Radical Cure of Hydrocele by the Injection of Pure Carbolic Acid ... 417

Reviews ... 417

Correspondence.

Paris Letter ... 421
Berlin Letter ... 423

Notes and Queries.

Insensible Perspiration ... 373
"Census of Hallucinations" ... 426
The Treatment of Whooping-Cough by Inhalation of Sulphurous Acid ... 426
A New Remedy for Hay Fever ... 426
Uses of Cocaine in Surgery ... 427
To Prevent Discoloration in Bruises ... 427
Ethoxycaffeine ... 427
Resorcin for Rodent Ulcer ... 428
The Effects of Alkalies on Assimilation 428
The Pharmacological Properties of Colchicine ... 429
Codeine in Diseases of Women ... 429
Pyoktanin—A New Antiseptic ... 429
Another Remedy for Sweating Feet ... 430
Treatment of Throat-Affections ... 430
Cantharides Plaster ... 430
For Persistent Coughs ... 430
Salicylate of Mercury in the Treatment of Syphilis ... 430
The Treatment of Alcoholism by Strychnine ... 431
Dyspepsia ... 431
Poisoning by Antifebrin ... 431
The Gastric Functions in Diabetes ... 432
The Cold Bath in Scarlet Fever ... 432
Iodoform Emulsion in Cold Abscess ... 432

Original Communications.

SOURCES OF FAILURE IN THE USE OF OXYGEN.

By Samuel S. Wallian, A.M., M.D., New York.

THE therapeutic use of oxygen is becoming much more general than ever before in the history of medicine; but it is questionable whether the efforts, thus far, have resulted in more than a very superficial and imperfect realization of the possibilities of this agent. It is not enough to assume that, since oxygen is everywhere, and at all times essential to the maintenance of animal life, it is therefore, necessarily, a valuable therapeutic agent. Yet this is the substance of the argument used by many of those who have casually investigated it.

At the bottom of all causes of failure to realize expected or desired results from the clinical exhibition of this gas is the want of proper appreciation or knowledge of the element itself, its varying conditions, modes of preparation and purification, and best methods of exhibition. To most operators oxygen is oxygen, no matter how evolved, how influenced by treatment or contact, how stored, or how exhibited. For example, a physician who decides that this agent is indicated in a given case, sends to some supply depot for a cylinder of the compressed gas, prepared, he knows not how carelessly, containing, no-

body, not even its manufacturer, knows what per cent. of free chlorine and other deleterious impurities, nor how stale from long standing. This gas is brought to the bedside of the patient, and is administered unmethodically, perhaps under strong pressure, and with no definite idea as to the quantity to be used or frequency of exhibition. Any other remedy, used with as little intelligence and method, would hardly be expected to produce other than unsatisfactory results.

As an illustration, it is well known that carbon exists in diverse forms and conditions, each as unlike the other as charcoal is unlike diamond. Silica is met with in the unattractive condition of common sand, and also in the exquisite forms of crystals, some of which are scarcely distinguishable from diamond itself. Other similar examples may be recalled or will suggest themselves.

It begins to be admitted that oxygen exists in almost as widely different forms. Under immense pressure and at an exceedingly low temperature, it has been reduced to a liquid, and, finally, to a solid state, in which latter condition it resembles snow. Ozone is presumed to be allotropic or high-tension oxygen. Atmospheric oxygen, which is the condition by which all oxygen is wont to be measured, is comparatively passive. The latter may be likened to the charcoal of the carbon series, while nascent oxygen more properly represents the diamond of the same series.

Very few among the many practitioners now experimenting with this agent have given its varying conditions even a passing thought. The greater part of the gas used by medical men is evolved by any of the crude processes at present in vogue; ordinarily by heat applied to a copper or iron retort containing chlorate of potassium and peroxide of manganese. At the moment of its evolution, as may be readily ascertained, it is in a *nascent* and intensely active condition. It has scarcely occurred to the ordinary chemist, or to the experimenting therapeutist, even in this age of electrical wonders, that this, according to Faraday, most magnetic of all the gases, unthinkingly retained for some time in contact with non-insulated metallic containers, may be thereby gradually deteriorated and caused to lose some of its chemical, vital or dynamic, and essential conditions and characteristics. The evolved gas is usually conducted through certain aqueous solutions into a gasometer made of metal. From this receptacle most of the oxygen of commerce is drawn through metal conductors into a pump of like m rial, by which it is forced into iron cylin the degree of compression varying from hundred to two thousand pounds per sq inch. The gas is retained in these cylin for an indefinite period, and used as requi the dispenser innocently presuming that its casual and desultory inhalation, his pat will realize all the benefits that can be deri from the use of this agent.

Even the chemists have but imperfe studied the varying and essentially diffe conditions of this active element, or the v ous influences which are constantly opera to modify it. It cannot be denied that it great convenience to be able to procure o gen, or any other gas, intended for medic use, compressed in readily portable cylind It is thus quite frequently available in e gencies and other cases when other forms the gas would be unattainable in time, or tirely out of the question. For this rea this ready-to-hand method of using this will no doubt continue to be popular. haps chemists will eventually come to rescue, by suggesting some feasible met of restoring to stale gas its original activ at the moment of using it, or of so insula or protecting the containing cylinders a practically prevent its deterioration.

Some inquiry has been broached as to relative value of moist and dry oxygen, this is another point which has received v little attention at the hands of experiment Nevertheless, the investigations of Brer Baker have been the source of valuable s gestions. He showed—1. That charc which burns with such brilliancy in ordi oxygen gas, can be heated to redness thoroughly desiccated oxygen without sh ing any tendency to further combustion. That sulphur, which in moist oxygen bu with a brilliant flame at a temperature 320° C., in oxygen which has been depri of all its moisture can be sublimed or tilled without igniting. 3. That phospho itself can be distilled in similarly dried o gen without igniting; whereas in moist o gen it promptly ignites at 60° C. 4. T ordinary phosphorus does not become lu nous, even at high tension, in perfectly an drous oxygen.

These experiments seem to have b carefully conducted, and clearly indicate t absolutely dry oxygen does not possess normal combining activities or affinities.

Again, Richardson's experiments have b repeatedly cited, showing that oxygen may

italized, as he terms it, without being mically changed; in which condition it to support life in warm-blooded animals, ugh responding to all the usual tests for oxygen, and being still capable of sus- ing life in reptiles and other cold-blooded ies.

hether a sample of oxygen designed for ition in a given case has been largely rived of its chemical or vital intensity, its bining activity, its moisture, or any other peutic essential on which may depend t may be not inaptly termed its vital ities, has not been asked, and is scarcely ght of. Was it nascent or stale? moist ry? Was it normal in its intensity, dy- ic and full of combining integrity, or had it devitalized by some occult influence too lpable for detection by known chemical s? In a word, was it practically flat, e, and unprofitable?

he discrepancies which appear in differ- reports of cases treated with this agent unquestionably be accounted for by the rent conditions under which the gas was ved, stored, and used. Ignoring essen- points in this direction, negative or indif- t results are an inevitable consequence, therefore really possess little therapeutic ificance.

f these premises be admitted, it follows the best results thus far obtained from clinical use of oxygen have been for the t part empirical and accidental rather rational and premeditated. It also fol- s that by the more general use of freshly ved gas several of these sources of failure ld be effectually forefended.

Another point to which little attention has en given is the method of inhaling. Those o permit their patients to passively inhale w gallons of the gas, once or twice *per* , have by no means done all that is pos- le towards realizing the possibilities of the tment. Most patients not specifically in- cted inhale very imperfectly, portions of e lungs being actually collapsed and habit- lly unused. Such patients may be de- edly benefited by a course of oxygen as y would be by any form of lung gymnas- s or exercises which tend to induce or com- l more complete respiration, their general ality being increased in proportion to the crease of respiratory vigor, and consequent crease of absorption, oxidation, and elimi- ation which follows.

The act of respiring oxygen, as usually ctised, is too much hurried,—that is to say, a second inspiration follows the first before the blood has had time to traverse the system. Hence, practically the same volume of blood remaining in the lungs, and having already absorbed the gas to its saturation-point, can appropriate no more, and the inhaled gas is simply rejected during expiration. This is a common and serious source of failure on the part of those who are conscientiously testing the treatment. It is also sometimes very difficult to teach patients how to inhale properly. The normal capacity of an average pair of lungs is from one hundred and thirty to two hundred and fifty cubic inches. The average capacity ordinarily utilized, even by persons in comparatively healthy condition, varies all the way from seventy-five to one hundred and fifty cubic inches. In case of invalids this average falls as low as forty or fifty cubic inches, or even less. Many patients who, although quite willing to make the necessary effort, cannot, until after considerable coaching, inspire more than twenty or thirty cubic inches at an effort, simply because they have never properly practised the breathing habit. This is especially true of smokers, who for some time persist in drawing in the gas as they would the smoke of a cigar or pipe. Even a physician, who was himself a constant smoker, made very many efforts before he succeeded in overcoming this apparently stupid tendency to merely fill the mouth and throat, as if he were mincingly enjoying his fragrant Havana.

To secure any adequate results patients must be carefully instructed in all the details of a thorough accomplishment of the respiratory act. The chest is to be erect, or even thrown forward, and the lungs are to be filled as nearly as possible to their fullest capacity. The inspired gas should be retained as long as can be conveniently done, and finally expelled, if feasible, through the nasal passages. Some practitioners insist that it is better to inspire also through the nasal organ, this being the normal route for atmospheric respiration. At least a dozen pulse-beats should intervene between the inspirations to insure a fresh access of blood to the lungs. It is also greatly to his advantage, and generally quite necessary, to cause the patient to adopt a system of chest gymnastics, using any of the various means in vogue for regularly and systematically exercising the thoracic muscles and expanding the chest. Imperfect breathing habits, from impediments of dress, cramped bodily posi-

tions, want of proper exercise, or from merely passive carelessness and chronic neglect, are unquestionably a prolific source of consumption, indigestion, and other serious chronic diseases. In this connection a spirometer is a valuable adjunct, but should be supplemented by vigorous and systematic chest-movements, and developing exercises in the open air.

In this connection it ought to be borne in mind that *the muscular system is the ultimate storehouse and principal utilizer of the oxygen taken into the system.* This is proven by the fact that carbonic acid has its origin chiefly in the muscles.

The quantity of oxygen to be inspired at a sitting varies according to the nature of the case; usually eight hundred to one thousand cubic inches is as much as the system can utilize, for the time being. To secure the best results this may be profitably repeated at least twice a day. This quantity, it may be well to note, refers to the undiluted gas. But undiluted gas should seldom be given. Ordinarily, to use it thus, is poor economy, since not more than twenty-five per cent. of a given volume of undiluted gas is really, and at the moment, absorbed and utilized. In all cases, except those of asphyxiation, narcotic poisoning, syncope, and a few other emergencies, such as puerperal convulsions, chloroform narcosis, uræmic poisoning, etc., it is better to use the gas well diluted. By analogy, and on the theory that dilution facilitates distribution, in ordinary cases, more oxygen will be realized from inhaling a fifty per cent. mixture than from the inhalation of pure gas.

As regards adjuncts to the gas, this is another neglected point. Very few practitioners have given a thought to the subject. A number of experimenters, it is true, have noted the apparent benefits resulting from the use of a mixture of oxygen with a certain percentage of monoxide of nitrogen. The latter gas is of itself an oxidizing agent, and when properly diluted is decidedly exhilarating. It also produces marked effects, of a soothing character, upon a disturbed or overwrought nervous system. Hence its modifying influence, when mingled with oxygen, are in many cases very desirable. It seems to act as a synergist, and to enhance the effects of oxygen itself, perhaps by aiding in its more rapid absorption into the blood and distribution throughout the system.

No rational aid or auxiliary should be neglected, and there are many, the more important ones relating especially to diet, exercise, not neglecting bathing and general hygiene, with such appeal to indicated remedies as is required by the exigencies arising in each case.

Another reason for shortcomings and unsatisfactory results in the use of oxygen is restriction of the methods of administration exclusively to inhalation. The respiratory tract, it should be remembered, is but one avenue to the system. Experiments with the gas, used by means of cutaneous absorption and by absorption from the alimentary tract, have not been extensive, but they indicate beyond question that these avenues are not only valuable, but are often more available and insure more prompt and thorough results in a rather large class of cases, than can be otherwise attained.

The same rules respecting the quality and condition of the gases used, as have already been indicated, must also here obtain and be insisted upon. Again, it would seem, from the limited experiments yet reported, that oxygen, compressed in water as a vehicle, retains its vital properties in a better degree, or at least, in a more readily available condition than when used in the usual gaseous state. Prompt effects are almost invariably observed after the imbibition of even very small quantities of the gas in aqueous solution under pressure. This is especially true of gastric and intestinal disorders, such as anorexia, obdurate vomiting, gastric catarrh, neuralgia of the stomach, and in all cases where there is inability to retain food. This oxygenated water (not a solution of peroxide of hydrogen, but oxygen compressed in distilled water) is almost invariably retained on a sensitive stomach when all forms of nourishment are persistently rejected. The quantity or volume received by the system through this method is comparatively small, but it seems to be more promptly and completely absorbed and assimilated than when introduced through the respiratory tract. It is proper to note in this connection that water charged with oxygen alone has not given the complete results which may be derived from the use of a mixture of this gas with nitrogen monoxide, the proportions varying from equal parts of the two gases to two parts of oxygen and one of monoxide. It is to be regretted that this method of using the agent has not been made more common and more available. In general practice, no competent company or firm as yet having ventured to prepare it on a commercial scale, as it is to be hoped

long be done. To give the best product, water, as stated, should be distilled, and uld receive the mingled gases under a sure of one hundred to one hundred and y pounds to the square inch; and, to in- e the best effect, it should, if feasible, be inistered through a tube attached di- ly to the nozzle of the containing siphon; if bottled, by means of a proper siphon-, various forms of which can now be had the market,—so that the contained gas shall largely escape by being first allowed to with force into an open tumbler or other eptacle, after the method of using soda- er and other effervescent drinks.

The method of utilizing the cutaneous sur- e, by means of oxygen baths, either hot or d, is as follows: The body of the patient is be encased in a convenient cabinet, nearly quite gas-tight, the head and face being un- ined. The body is first to be prepared means of dry steam heat, as in the Turkish -room, until free diaphoresis is induced. current of oxygen is then to be admitted m near the bottom of the cabinet. Oxy- n being heavier than the contained air and por, the latter are allowed to escape through opening at the top, until a lighted match ws the presence of the gas in the escaping rent. Fresh oxygen is to be continuously oduced for the space of thirty or forty utes, or longer, according to the case, en the patient is to be removed from the inet, quickly rubbed dry, and a general w produced by means of friction and sage. This method of administering the promises most in complicated skin-dis- es, whether simple or specific; in blood- isoning; in certain forms of infectious dis- es, as small-pox, scarlatina, diphtheria, c.; in the typhoid state, and in all such es of general debility as are accompanied torpor or incompetency of the respiratory d digestive organs. It requires consider- le care and some special apparatus, but in ny cases the results will warrant the effort d outlay. A portable cabinet can be con- ructed by any ordinary cabinet-maker or echanic, and various forms are offered for le by several manufacturers. Portable ap- aratus for the instantaneous generation of e gas is also now available, and becomes a ecessity in many cases if the most perfect sults would be obtained. In case of the xygen bath, the gas should be conducted irectly from the generator to the cabinet; nd this necessitates a generating apparatus hich is capable of supplying a moderate but uninterrupted volume of the gas rather than one which is intermittent in its action. Such an apparatus has been devised and is now on the market. It can be procured through any dealer in surgical instruments.

Some time ago the writer advised that, in certain cases, the gas should be passed through drying material, to deprive it, as far as possible, of moisture. Brereton Baker's experiments with artificially-dried oxygen, already cited, would indicate that this was a mistake, and that, even in affections characterized by profuse catarrhal conditions, the use of gas containing more or less moisture is decidedly preferable. In view of this fact, the gas should be passed through a bottle of pure water or some aqueous solution, after its exit from the washing and filtering-jars, before being inhaled. In other words, the last bottle in the purifying series should contain aqueous fluid rather than a desiccating material.

119 East Twenty-eighth Street.

---

*TREATMENT OF ERYSIPELAS OF TRUNK AND LIMBS BY MEANS OF WARM-WATER BATH.**

By Dr. A. Rose, New York.

IN addition to several papers on the treatment of erysipelas, especially the "operative treatment" (so called by Kraske and Riedel), which have recently been read before this Society, I wish to speak on a method I have practised for years, and which method (on account of the invariably good results attained by me) deserves to be named and practised on a par with Kraske-Riedel's operation.

Our subject, the treatment of erysipelas, is at present entitled to special consideration. It is desirable that the experience with the latest operative treatment or other equally valuable, or, even better, therapeutic measures, should be disseminated.

The warm-water bath was not mentioned, either in our papers on the treatment of erysipelas or in the discussion on these papers.

It is possible, even probable, that others have applied this means in the treatment of erysipelas of the limbs and the trunk, but I have found no reports in the literature, nor have I heard of it from other sources. If my

* Read before the German Medical Society of New York, December 2, 1889.

favorable results should be confirmed by the experience of others, it must appear remarkable that such a simple method, as the one practised by me, has heretofore been overlooked.

In 1872, Dr. Herman Guleke and myself introduced in St. Francis Hospital of this city treatment of wounds by means of the warm-water bath, and practised this method quite extensively. This happened at the period of the so-called "open-wound treatment." Professor Frank H. Hamilton, who learned from us this method of immersion, became its enthusiastic apostle among our American colleagues. The importance of the permanent bath at that time—that is, at the period when Lister's dressing was not yet introduced, or at the pre-antiseptic period—may be best judged of by reading the earlier editions of Billroth's "General Surgical Pathology and Therapeutics," and, moreover, Schede's lecture "On Injuries of Hand and Fingers" in Volkmann's collection.

As we all know, either by our own experience or through the literature quoted above, fresh aseptic wounds kept in warm water will heal without complications. To a certain degree the permanent bath is as powerful a means of controlling inflammation as the modern antiseptic dressings. By relating two cases in my practice, I wish to demonstrate to you that erysipelatous inflammation, even in an advanced state, can be reduced by means of the permanent warm-water bath just as well, and perhaps more surely, than by the Kraske-Riedel method.

About a year ago Dr. Treskatis requested me to see a woman with erysipelas of the head and forearm. The erysipelatous inflammation had then existed for some days. The physician who had first seen the case had ordered ice-water applications. Dr. Treskatis had substituted an antiseptic ointment. I found the patient with a high fever, complaining of much pain; the left hand, the whole forearm, and part of the upper arm erysipelatous. The tips of the fingers showed incipient gangrene. This was one of those rare cases in which the erysipelatous œdema assumes such proportion that, in consequence of high tension of the tissues, the circulation in the extremities—in our case the finger-tips—becomes arrested and gangrene sets in. It is not impossible that the ice-water applications aided in bringing on this condition. I at once had the arm placed in a warm-water bath as far up as the erysipelas extended. The bathing apparatus consisted of an oval-shaped wash-boiler; band reaching from one handle to the other se to suspend the arm under water in su manner that the hand and the elbow we the same level.

When I visited the patient the next fever and pain had completely subsided, appetite, previously wanting, had retur the general condition was correspondi satisfactory,—in short, the case prese from within twenty-four hours most ma lous change. Thus ended the erysipela inflammation. On account of the gangre parts, I had the bath continued for seve days and nights. I shall not occupy y time with the final history of the case.

The second case was that of Fred. K years of age. This child had sustained insignificant abrasion of skin on the h which abrasion had become inflamed. August 5, 1889, the mother noticed circ scribed redness around the small lesion. August 7 she sought the advice of a dr gist, a man who in his neighborhood en great popularity as a medical adviser. treatment consisted in the application some liquid. Notwithstanding the prog made by the erysipelas, and constant h fever, the druggist, who saw the child da neglected to advise the mother to con a physician. At last, in the evening of A gust 10, the child was brought to my of The erysipelas then extended from the t to the upper third of the thigh. Tempe ture was 105°, the patient, who had a p nomenally strong voice, was crying constan especially at every touch of the disea parts. While the child was under the in ence of chloroform, I washed the affect limb first with soap and water, then w ether, and, finally, with a five per cent. so tion of carbolic acid. I then applied t Kraske-Riedel fence. I found barely spa enough on the thigh—anteriorly parallel Poupart's ligament, and posteriorly paral to and directly below the gluteal fo —to make the scarifications in the healt skin bordering the erysipelas. The wh limb was then covered with gauze saturat with a two per cent. solution of carbo acid, and was constantly kept moist with th solution.

When I again saw the child on the sa evening, about three hours after the ope tion, its temperature was reduced, it sl quietly, for the first time in several days. I did not wish to disturb this sound sleep did not take the temperature.

e following day I found the temperature 3.5°. The erysipelas had traversed the n boundary. The powerful voice of the resounded incessantly, and it acted in a demonstrative manner that the whole e became alarmed.

n careful examination, I was able to con- e myself that the fence had been applied erly on the preceding evening, that the pelas had been enclosed exactly; but I confess that the task of keeping the rmost part of the thigh aseptic was a r difficult one.

at once removed all dressings, placed child in a bath-tub filled with warm r, and remained until it was quieted.

e warm bath relieves pain most wonder- . I cannot understand why so many s and methods of treatment are recom- ded against burns and the effects of ing, while in the warm bath we possess very ideal means against these troubles hatever degree and extent. It keeps injuries aseptic, and is more soothing anything else. Napoleon, on St. Helena, ring from cancer of the stomach, appre- d highly this effect of the warm bath. ften used to remain half and even whole in the bath. "If my captivity should be nded to my corpse, I wish to be buried e foot of the fountain to which I owed relief." (Si ma captivité doit durer mon cadavre, je désire être enterré au de la fontaine à laquelle j'ai dû quelque gement.) These were among his last ls. At Longwood there was scarcity of r; the fountain of which Napoleon speaks is testament, and from which the water brought, was situated at some distance, Sir Hudson Lowe, on account of the dif- ties in supplying the water for the baths, ed to deprive him of them, saying, hy does he need to stew himself in hot r?"

y little patient after a few minutes felt fortable in the water. In the evening temperature was normal. He slept the le night in the bath. As there was no ation of temperature observed during following day and evening,—of the 12th August,—and as the general condition all that could be desired, I took him of the water, anointed the limb which been the seat of inflammation with an fferent ointment, and dressed it with on. For some days redness of the skin swelling remained, but this may follow r erysipelas, and it follows after any per- manent bath of some duration. The child, however, remained free from fever as well as pain.

As mentioned above, I quite frequently made use of the warm-water bath in cases of erysipelas of the limbs, but shall abstain from enumeration of additional cases.

To explain the effect of the warm bath, we have to consider the following facts: Cutaneous erysipelas of the trunk and the extremities is a capillary lymphangitis of the cutis, brought on by infection with Fehleisen's streptococci. The clefts of lymphatics and lymphatic vessels of the skin, it is true, are not the only channels of invasion of the cocci of erysipelas. It is likewise true that they may settle on the mucous membranes, but this circumstance is not within the scope of this paper. Wherever these microbes settle, they show a preference for spreading by way of the lymphatics. From the natural history of Fehleisen's cocci it is to be noted that their cultures develop well at 70° F., that they are luxuriously prolific at 95° to 100°, very much so at 103°, less so at 105°, not at all at 107° and above, and that they surely die in a temperature of 120°. At temperatures as low as 30° to 20° F. they remained alive; in a still lower temperature they probably cannot live.

I now beg leave to offer the following explanation of the effect of immersion: After a part of our body has remained in the warm bath for a comparatively short time, it soaks and swells, probably by imbibition. In consequence of this swelling and soaking of the tissues, the clefts of the lymphatics and the lymphatic vessels are compressed and closed, the centre of infection is shut off. No cocci of erysipelas can then penetrate, and, as soon as the centre of infection is shut off, the temperature of the body will return to its normal standard. It is quite possible that the vitality of the cocci is reduced by the water-bath itself.

As stated above, the water bath is a powerful means of keeping inflammation within proper limits, it causes a permanent and considerable reduction of warmth, much more reduction than can be produced by covering the parts with ice-bags, and a temperature of the water only a few degrees below blood-heat, will suffice for this purpose. The parts immersed are most closely surrounded by a cooler, excellent conductor of heat; hence the great effect. In view of the behavior of the cocci of erysipelas in certain temperatures, the antipyretic effect of the bath, however,

cannot serve as an explanation of its effect upon erysipelas.

Concerning the temperature of the bath, I have found 90° to 95° effective and to the patient agreeable. As a matter of course, hot water has to be added from time to time to keep the temperature up to the desired degree.

SOME POINTS IN NEGATIVE THERAPEUTICS.

By G. Walter Barr, M.D., Bridgeport, Ill.

In negative therapeutics tobacco plays, perhaps, the most important *rôle*, with tea as the next article most often interdicted in the treatment of digestive, nervous, and other diseases. Either of these luxuries are in more common use than is alcohol and its congeners.

In certain public dispensaries and among practitioners of my acquaintance, to say the least, there is little idea of differentiating between different kinds of cigars, tobaccos, and teas. Many a man told to stop smoking, and many a woman told to stop drinking tea and coffee, make no attempt to follow the directions of the prescriber, because they do not intend to obey what they deem the most important command at the sacrifice of their comfort. Most of these people can be retained as clients until they are cured and their dietary strictly controlled, I am convinced, by agreeing on a compromise along the following lines. This matter is of so general an importance that I deem it my duty to record my observations and the results of my experiments.

The physiological action of nicotine is well known, and because it is a powerful substance when taken into the animal economy, it is like the notorious bad boy charged with all the trouble that occurs in the neighborhood. Several years ago I was struck with the intense results of a little cigar-smoking on my nervous system, and by the fact that these results had a great variance in details from the physiological action of nicotine as reported by all authorities. This caused me to study the secrets of the cigar-maker's art and the different kinds of cigars from a physiological stand-point.

Cigars are popularly divided into two classes,—"good" and "bad." Each of these classes, or rather all cigars, are properly divided by the initiated into two other classes, —flavored and unflavored. The most popular cigars, and, consequently, the ones m often called "good," are the flavored o connoisseurs look with contempt on all vored goods. At least nine-tenths of cigars sold in the United States are flavo and I am confident I am correct in sta the general principle, that *it is not the tob but the flavoring additions to the cigar that harmful, in a practical sense, to the nervous tem and digestion of man.*

The substances most used as flavor adulterants of cigars are valerian, tonka, Jamaica rum. There are many recipes flavoring, each jealously guarded in the tory in which it is used; but, like the li ment formulæ kept in families, they are very similar. The quantity of each drug one cigar is very small, indeed, but w smoked, the action of the drug is far out the usual ratio of dose to effect. One high flavored cigar smoked short will produce susceptible person the headache characte tic of an overdose of valerian and other effe of that drug more or less modified by other ingredients of the flavoring mate The total effect of a highly-flavored cigar to depress the action of the stomach liver, slow the heart, produce a feeling languor, and a headache between the e dull to sharp, according to susceptibil The effects depend for intensity on the qu tity of flavor and the susceptibility of the p son to its action. Many persons not acc tomed to their use can bring on all the sy toms of a torpid liver—anorexia, coa tongue, constipation—by smoking a few vored cigars. The same persons can smo a dozen unflavored cigars a day without the least degree producing this effect. F vored cigars tend to retard digestion; u flavored cigars do not. The effect of f vored cigars on the nervous system is manif greater than that of unflavored ones.

The moral is, cause the man wh smoking is injuring to quit smoking *flavor* cigars, and in most of the cases you will complish all you desire.

The real difficulty is to distinguish flavo cigars. No reliance whatever can be pla in the word of the average salesman, as I ha clearly determined by experiment. Many them depend on the statements of the man facturer's agent to them, which are very reliable as a rule. The best method of te ing is to draw through an unlighted cigar a reverse direction,—the end usually ligh being in the mouth,—and then the prese of flavor can usually be determined by t

ctised taste. All cigars which leave on bottom of the box a brown stain are fla-ed, but the reverse does not obtain. A of cigars may be flavored so as to de-ve experts, but this is an extreme case. The physician is not a judge on this point self, he may get a friend engaged in nufacturing the weeds to pick out a few nds of unflavored cigars—of another's nufacture—sold in the town, and recom-nd these to clients who will smoke.

As to tea-drinking, the problem and its so-tion is much more simple. *Iced tea has none the physiological action of theine* if it is kept cold for a short time. I have known a n of nervous temperament, who is kept ake all night by a single cup of tea, to nk a half-gallon of iced-tea during the ening and sleep soundly at his usual time retiring. Others made very "nervous" by tea, I have caused to drink large quanti-s of iced-tea with no appreciable effect. is fact, which I have never seen men-ned, opens up a very interesting field for estigation, and I hope in a future paper to il the proposition of which this is prob-y a corollary. If the tea-grounds are al-ed to remain in the liquid, the iced-tea is ally kept long enough before drinking to olve more tannin than is usual in hot tea; ce the tea should be strained as soon as oved from the fire.

Coffee-drinkers can sometimes be switched to cocoa when the latter is not contra-icated. There are no unadulterated chew-g tobacco, smoking tobacco, nor cigarettes; e users of these abominations may be de-cted to unflavored cigars sometimes.

SOME THERAPEUTIC USES OF BUTTERMILK.

By Stanley M. Ward, M.D., Scranton, Pa.

A RECENT writer, Dr. Henry D. White, of New Jersey, in the *New York Medical Journal*, relates the history of a case of Bright's disease of the kidneys occurring in a large, heavy female, aged 55, in whom no alleviation could be brought about by the ordinary remedies. The patient finally, by her own solicitation, was given buttermilk, the use of which was followed by the happiest results. This use of buttermilk is by no means new, though Dr. White states that he had never in his "reading seen any reference to its use." Who first used it in this connection we are unable to say, but the writer, in the same journal, under date of May 22, 1886, gives the history of a severe case of Bright's disease, with active symptoms, marked more especially by the discharge of phenomenally large quantities of albumen (on several occasions, it being stated, "the urine, under heat and acid, was almost solid in the test-tube"), in which, after the use of iron in various forms, pilocarpine, compound jalap powder, and other drugs more or less indicated, the patient began taking buttermilk, two quarts per diem. Its effects being markedly favorable, the quantity was increased, and from this time the chief reliance was put on this agent, as the writer states that the patient finally used from "six to eight gallons per week." There seems to have been no question in this last-mentioned case as to the diagnosis, direct results obtained from the buttermilk, or ultimate benefit to the patient. Symptoms so well marked could admit of but one explanation. We are told that diminution in the quantity of urine passed, constipation, and headache followed invariably if the supply of buttermilk became exhausted; and, finally, an examination of the urine, made one year and nine months after the first observation, the patient during a great part of this time having been engaged in his usual vocation, revealed the fact that minute quantities of albumen were still present. *A priori*, we should expect from an analysis of buttermilk, and from the knowledge we have of the good results obtained by the use of an almost analogous agent,—viz., skimmed milk,—that it would prove of benefit in those forms of Bright's disease marked by scanty urinary flow, more or less œdema, and, in truth, all those results which follow a clogged and hampered condition of the *tubuli uriniferi*, the desquamative nephritis, or the acute inflammatory form; cases not yet advanced to either atrophy or steatosis, or before degeneration in the blood-vessels and other organs had taken place; in a word, fibrinosis. If we assume this condition to be the ultimatum of a variable number of such cases, great benefit would follow its use.

Pavy speaks of buttermilk as "a thin, residuary liquid, yielded when butter is prepared directly from milk," and gives as an analysis of 100 parts the following:

	Nit. matters.	Fat.	Lactose.	Salts.	Water.
Buttermilk.....	4.1	.7	6.4	.8	88.00
Cow's milk.....	4.1	3.9	5.2	.8	86.00
Skimmed milk.....	3.8	2.0	5.4	.8	.88

Thus, it will be seen that, on account of the large quantity of water and lactose, the fats being in much smaller quantities even than in milk which has been skimmed, an almost ideal diuretic is at hand. It is somewhat strange that buttermilk has been used for its diuretic and laxative properties so little, though we confess that its taste is an objection that in many instances cannot be overcome. In my own practice I have been forced to stop using it several times on this account. The writer has prescribed buttermilk not only in cases of albuminuria, but likewise in cystitis, gonorrhœa, and other affections of the urinary passages with universally good effects. It has seemed to be indicated wherever mucilaginous drinks, administered solely for their soothing effect, are prescribed. The amount of nitrogenized matters present probably adds somewhat to its merits, while the salts give a flavor not at all disagreeable, when it can be taken at all. On the whole, my use of this preparation, though restricted to affections of the kidneys and organs connected therewith, for the most part has led me to esteem it highly and to believe it worthy of great confidence whenever the practitioner desires to excite the flow of urine, to modify its character, or to soothe an inflamed and congested mucous surface over which this excretion is to pass.

Another class of diseased conditions has been relieved by buttermilk,—those affecting the stomach,—the principal symptoms being eructations and vomiting. Eulenberg recommends it in atrophy of the peptic glands. In that condition, known as "sick stomach," a condition dependent on many different causes, it will be found beneficial. Dr. Peare, of Kansas, in these columns (April 15, 1885), drew attention to its use in this connection, and related the histories of four cases, the patients, with a single exception, being infants of less than three years of age. Prompt relief was afforded, even though, in the case of the adult, peritonitis was at the bottom of the gastric disturbance. Vomiting is a symptom, especially in peritonitis, which we all fear and which usually proves exceedingly difficult to combat. My own preference, or rather the preference of my patients, has been for koumiss in treating the vomiting of peritonitis, and only a few times, because it has so happened that the patients have disliked the taste of buttermilk, have I used it.

In that peculiar condition known as the "vomiting of pregnancy" my experience has been favorable with this agent also, tho it is altogether likely that in this connecti it will fail as often as it succeeds. But milk should always be freshly prepared w it is to be used therapeutically. Few st achs will retain the bitter nauseousness buttermilk even a week old. When used check vomiting, it should be administe ice-cold, and it is best to begin in sm quantities,—half a teaspoonful, repeated short intervals, say every fifteen to twe minutes for a few doses, then increasing t whole teaspoonful every half-hour or when, if well borne, it is accomplishing t desired result, and should now be given the rate of a tablespoonful every two hou or as occasion demands. In the case children with cholera infantum success quieting the stomach may often be achie by interdicting everything else, and using few drops of *fresh* ice-cold buttermilk at tervals ranging in length according to t severity of the case. The physician will fi that frequently buttermilk will not only co trol the vomiting of the little sufferers wi this disease, but will furnish the requir nutriment for many hours. When used Bright's disease, the stomach not demandi especial consideration, the buttermilk is b given at an ordinary temperature, the qua tity at the start being an ordinary glass four times daily, increasing as the severi of the case and the personality of the patie demand. In other genito-urinary affectio this quantity will usually be found sufficie though no harm will ensue by increasing and if great *ardor urinæ*, as in cases of gono rhœa, be present, it may be made strong alkaline by the addition of a quantity of b carbonate of sodium.

In conclusion, I have this to say of bu termilk: let no one be deterred from maki use of it, either because of its source an connections or because of its easy acce We all, physicians particularly, would do w to remember the story of Naaman the lepe This man, because of the simplicity of hi doctor's prescription, almost refused to eve try the remedy. Nevertheless, hydrotherap proved eminently successful in his case whe carried out according to directions, and th homely, despised buttermilk, used in proper cases, with no anticipation of miraculous re sults, will, I feel perfectly well assured, cor rect many diseased conditions, and bring about the normal state in a manner and in a length of time which shall prove both su prising and agreeable to all concerned.

CASE OF POISONING BY OIL OF CEDAR.

By R. M. Ellyson, M.D., Washington, D. C.

W. N., male, aged 26, white, who had gonorrhœa, was advised by a friend to take oil of cedar, commencing with 5-drop doses, and increasing the dose gradually until some inconvenience was felt. He increased the dose gradually for several days, but not deriving any benefit from it, thought he would take teaspoonful doses. He took a teaspoonful at 9 A.M., and repeated the dose at 10 A.M. Ten or fifteen minutes after taking the last dose he became dizzy, and had a ringing sensation in the ears; in walking he felt as though he were moving very rapidly, but realized that it was only an illusion. He went to a neighboring drug-store, and almost immediately, on entering the store, fell backward to the floor in a violent convulsion. During the convulsion his face was cyanosed, the mouth open, and the lower jaw fixed. I was then summoned, and reached him about half an hour after he took the last dose, and found him lying in a semicomatose condition on a sofa in the rear of the store. On examination, I found his pupils slightly dilated, respiration good, pulse 130 and weak. While counting the pulse I could feel the muscles of the forearm contracting beneath my fingers. He was perspiring freely, and his skin was warm. I gave him $\frac{1}{12}$ grain of apomorphine hypodermically, which produced emesis in less than a minute. His pulse began to improve immediately after vomiting, and when I left, half an hour later, was 90 and of good volume. The twitching of the muscles also ceased soon after vomiting. The vomited matter had a strong odor of oil of cedar. I called to see him several hours later, and was informed that he had remained unconscious over an hour, and, soon after regaining his senses, he went to his brother's home. For two or three days afterwards he suffered from dizziness and pains in all of his limbs, especially in the joints. There was no gastric or intestinal symptoms following the ingestion of the poison.

In looking over the literature of the subject, I found eight cases reported, of which the following are brief synopses:

Case I.—(Reported by D. C. Holley, M.D., Vernon, Mich.)—Female, mother of three or four children, under the mistaken idea that she was pregnant, took ℥ss oil of cedar to produce abortion. The first effect was felt in her head. Her eyes seemed to be bursting from their sockets, and her head as if it were encircled with an iron band. In a few minutes violent convulsions came on, and she lost consciousness for twelve hours.

Treatment.—Emesis with zinci sulph., chloral, and potass. brom., aa gr. xx, every two hours, to control convulsions. Recovery.

Case II.—(Reported by W. P. Bolles, M.D., pathologist, Boston City Hospital, 1877.)—Female, aged 19, took ℥i to produce abortion. When admitted to hospital (four or five hours after taking the poison) she was insensible, almost pulseless, groaning with every breath, rigid, and somewhat convulsed. An emetic of zinci sulph. and ipecac. being given, and repeated in half an hour, without the desired effect, the stomach-pump was used. The urine was drawn off, and had a strong odor of the oil of cedar. Patient died from heart-failure twenty-six hours after taking the poison.

Case III.—(Reported by F. C. Lawrence, C.M., M.D., Canada.)—Male, aged 35, took ℥ss with suicidal intent. Violent convulsions soon followed, and were controlled by inhalation of chloroform. Emesis was produced by warm water and olive oil. Remained unconscious seventeen hours. For a week afterwards he suffered from headache and irritable stomach. Recovery.

Case IV.—(Reported by F. C. Lawrence, C.M., M.D., Canada.)—Child, 2½ years old, took ℥ii oil of cedar. An emetic was promptly given, producing free emesis. Before the emetic acted it had a violent convulsion. It suffered from gastric irritation for several days afterwards. Recovery.

Case V.—(Reported by S. C. Wait, M.D., Gouverneur, N. Y.)—Female, aged 26, took ℥i to produce abortion. Convulsions followed in twenty minutes, eyes glaring, jaw set, pulse 60, but soon fell to 45. Convulsions lasted one and a half hours; was unconscious ten hours. Failed to produce abortion.

Treatment.—Emetic zinci sulph. Recovery.

Case VI.—(Reported by S. C. Wait, M.D., Gouverneur, N. Y.)—Female, aged 32, took an unknown quantity to produce abortion. Symptoms same as Case IV., and the same treatment followed, but patient died of heart-failure about an hour after taking the poison.

Case VII.—(Reported by S. C. Wait, M.D., Gouverneur, N. Y.)—Female, aged 17, took ℥i with suicidal intent. Was seen by Dr. Wait fifteen minutes after taking the poison. She had a convulsion before an emetic could be given, but an emetic of zinci sulph. was given as soon as the first convulsion ceased, producing free emesis. She lost consciousness

during the first convulsion, and remained unconscious six hours. Pulse 50; breathing stertorous. An hour after taking the poison her face became livid, heart weak, and death seemed inevitable. Was bled from arm, which was followed by immediate improvement. After gaining her senses she complained of pain in her stomach and dizziness. Recovery.

CASE VIII.—(Reported by S. C. Wait, M.D., Gouverneur, N. Y.)—Female, aged 17, took an unknown quantity to produce abortion. The symptoms were similar to Case VII., and the same treatment followed, but the patient died from heart-failure in an hour.

Of the eight cases, five of them took it to produce abortion, which it failed to do in all of the cases; two took it with suicidal intent, and one accidentally. Three of the cases proved fatal, all having taken the oil to produce abortion.

The autopsies in the three fatal cases showed slight inflammation of the lining of the stomach and intestines. In one case (No. II.) the pia mater of the brain was slightly injected.

My case resembled all of the cases reported, except that the pulse was very rapid, while it was very slow in all the cases in which the pulse-rate was recorded. The toxic effect of the poison seems to be exerted on the brain, and for the following reasons it seems to me to act directly on it, and is not a reflex act produced by irritation of the alimentary track. The gastric and intestinal symptoms and lesions are too slight, and the coma is more profound and longer than it is when produced by an irritant poison.

BIBLIOGRAPHY.

Med. Surg. Rep. Boston City Hospital, ii. 270–272.

Detroit Rev. Med. and Pharm., xi. 478.

Canada Med. Record, iv. 248.

Boston Medical and Surgical Journal, xl. 469–78.

521 TWELFTH STREET, N. W.,
April 8, 1890.

TABLET TRITURATES AND COMPRESSED PILLS.

BY E. P. HURD, M.D., NEWBURYPORT, MASS.

THE manufacture and use of pharmaceutical preparations known as tablet triturates, compressed tablets, or compressed pills seems to be on the increase. One of the arguments in favor of the tablet triturate is its cheapness. The pharmacist has an interest in selling these tablets at a very low rate, and by this means obtaining the trade of physicians rather than druggists. The representative of the manufacturing house at stated periods, visits all the physicians in a given locality with his samples, and for a few dollars, paid on receipt of the goods, each medical man is furnished with quite an outfit of the drugs which he most uses in his practice, in a form very handy for administration. It is needless to say that the low price per thousand for the compressed tablets gives the latter, in the estimation of the frugal practitioner, a great advantage over the neat little pills, gelatin-coated or sugar-coated, and one might almost seem as if the day of pill-making were over. Then, again, the cheapness of the medicinal tablets favors another tendency of the age,—*i.e.*, physicians in many parts of the country are coming more and more into the habit of carrying their medicines with them; this is a primitive custom, but one which has, doubtless, given the homœopathic practitioner of former days (if not of the present day) some slight advantage in the struggle for existence. There is a satisfaction, physicians say (who now rely on the triturates and seldom write prescriptions), in being able to dispense at the bedside, and in a safe and convenient form, the medicines indicated. Moreover, by adding a small increment to the bill, the cost of the medicine, with a fair percentage of profit is recovered. Again, the tablets are supposed to represent a definite dose of the ingredient, and it is a convenience to the physician to know the exact amount of the drug which he is dispensing.

Whether the increasing popularity of the tablet is destined largely to work against the interest of the retail apothecary, whose shelves are already heavily weighted with the new preparations,—some salable and some very unsalable,—which he must "carry" in order to keep up with the times, it is impossible as yet to say; nor do we yet know whether drugs will maintain their active therapeutic properties as well in the compressed tablet as in the well-coated pill-form. It is quite probable that the active principle of many drugs will deteriorate more or less in the tablet form, but this is a matter for the future to determine.

There is a real objection to the employment of compressed tablets which is applicable to the employment of all medicines

e solid state,—*i.e.*, absorption is not so cer-
n nor so speedy when the drug is given in
e solid as when it is given in the liquid
te. Doubtless, as a rule, the tablet trit-
ate is more readily dissolved in the stomach
an the pill; at the same time (to quote the
rds of Gubler), "When we have to do
th maladies of a grave character, and
hen we are obliged to depend absolutely
the medicines, it is desirable to resort,
t only to soluble substances, but to sub-
nces in solution, under the form of syrups
of potions, and even in the state of dilute
lutions, in order to be sure of giving the
e requisite to produce the effects de-
ed."*

Certainly some medicines, like quinine and
licylic acid, are much more likely to have
e desired therapeutic action if given in so-
tion. It would, in fact, not be good prac-
e in a case of severe intermittent, to admin-
ter in pill or tablet form sufficient quinine to
ntrol the ague, on account of the danger of
ovoking severe gastric irritation.

Opium will often disappoint if given in the
lid form, and who has not heard of Lan-
y's patient to whom opium pills were given
r a painful abdominal affection? At the
topsy great quantities of undissolved pills
ere found in the intestines.

INSENSIBLE PERSPIRATION.

At the Ninth Congress of Internal Medi-
ine at Vienna (*British Medical Journal*, May
, 1890) DR. UNNA, of Hamburg, read a
aper on the insensible perspiration of the
kin. He said physiologists were not yet
greed as to the results of varnishing the
ody. As a number of impenetrable cover-
ngs for the skin had recently been intro-
uced into dermato-therapeutics, Dr. Unna,
n conjunction with Dr. Mielck, carried out
a number of experiments to discover the
effect of this mode of treatment. The ex-
periments proved that fats invariably dimin-
shed the evaporation of water from the skin,
and lanolin did so to a higher degree than
the fats of glycerin, though lanolin could be
freely mixed with water. The same was
true of glycerin, which, though it could be
mixed with water in any proportion, never-
theless formed a great obstacle to water
vapor. The evaporation density of vaseline
was of a similar intensity to that of lanolin.
Gelatin, however, was the real contrast to the
fats; a thin layer of gelatin augmented the
water evaporation of the skin. This fact fur-
nished the explanation of a clinical observa-
tion long known,—namely, that a person cov-
ered with gelatin over all his body constantly
felt more or less cold. A similar contrast to
that between fat and gelatin was also observed
between caoutchouc and gutta-percha on the
one hand and collodion on the other; whereas
the two former diminished evaporation (caout-
chouc did so much more than gutta-percha),
thin layers of collodion increased it. Gela-
tin and collodion, which increased evaporation,
had also another common character,—namely,
that they spontaneously contracted when
drying up. As they were, however, pre-
vented from contracting when drying up
over the skin, their normal structure had to
be changed; they thus became porous bodies.
Dr. Unna believed that the positive increase
of perspiration, owing to covering the skin
with gelatin and collodion respectively, was
due to the change of the natural evap-
orating layers of the skin by the application
of porous substances. The strong check
which the water-evaporation of the skin sus-
tained by the application of fats also partly
explained the enormous oscillations of the
numbers which were found in the deter-
mination of the natural water-evaporation of
the living skin by physiologists. The fact
that the horny layer of the skin was covered
with layers of fat of varying size had not been
taken into account in these cases, as was also
proved by the researches of Erismann. In
conclusion, Dr. Unna directed attention to
the practical bearings of these physiological
experiments on medicine. The application
of fat to the body preserved warmth, and
drove great quantities of water towards the
kidneys. On the contrary, the artificial un-
fatting of the skin took away part of the
warmth, owing to increased evaporation, and
the kidneys were thus freed of part of the
water. He recommended the "unfatting" of
the skin, with subsequent application of gel-
atin to the body to diminish fever, and at the
same time relieve the kidney of part of its
water in inflammations of that organ.

PROFESSOR SENATOR said he had long
been in the habit of applying gelatin to the
body. In patients suffering from fever, he
had covered the body with gelatin to diminish
the temperature. The temperature fell con-
siderably, but the experiments were not con-
tinued owing to the want of appropriate
preparations.

* "Cours de Thérapeutique," 1880.

The Therapeutic Gazette

EDITED BY

ROBERT MEADE SMITH, A.M., M.D.,
Professor of Comparative Physiology, University of Pennsylvania,
PHILADELPHIA.

GEO. S. DAVIS,
Medical Publisher, Box 470,
DETROIT, MICH.
Philadelphia, 714 Filbert Street.

SUBSCRIPTION RATES FOR 1890.

(Journal increased to 72 pages each month.)

THERAPEUTIC GAZETTE (postage included).....$2.00
THERAPEUTIC GAZETTE with MEDICAL AGE..... 2.50
THERAPEUTIC GAZETTE with AMERICAN LANCET 3.25
THERAPEUTIC GAZETTE with AGE and LANCET... 4.00

Foreign subscriptions may be ordered through our agent in England, Mr. H. K. Lewis, Medical Publisher and Bookseller, 136 Gower Street, London. Price 10s. Remittances may be made either by Postal Order or Stamps.

Price to Foreign Subscribers direct (postage included), $2.50 (10 shillings). English postage stamps received on remittances.

Editorial communications should be addressed 332 South Twenty-first Street, Philadelphia. Articles intended for the Original Department of the GAZETTE will be accepted only with the understanding that they are contributed to it exclusively.

Business communications should be addressed to the Publishers.

Leading Articles.

THE DIGESTIBILITY OF BOILED MILK.

SINCE the presence of various infective micro-organisms have been recognized in milk, the custom of boiling this aliment before consuming it is becoming more and more general. In fact, as sterilization is not assured by the simple raising to the boiling-point in many cases, various contrivances are employed through whose use the temperature of the milk may be raised considerably above 212° F. Nevertheless, this latter procedure can never be as extensively employed as simple boiling, for it necessitates a complicated manipulation and in many cases costly apparatus. Perhaps in the future, when the importance of sterilizing milk becomes thoroughly recognized, companies may be formed having for their object the distribution and sale of sterilized milk. Before, however, such an industry should be encouraged, and even in the present state of affairs when boiled milk is so frequently employed as a food, it becomes very desirable to recognize if the milk, after being raised to the boiling temperature, will possess all the nutritive properties of fresh milk; in other words, whether it is equally digestible and assimilable. Various experiments have been made with this object in view. Thus, Hübner, in a number of experiments on sick children, found that under the use of boiled milk more than one-half the number of children increased in weight, while the other half remained stationary or lost weight. This result is apparently satisfactory, when it is remembered that these studies were made on sick children; but they, nevertheless, lose greatly in value when it is recognized that, in the first place, there was no comparison made with the fresh milk, and it is evident that such studies should be made on healthy individuals and not on children suffering from various diseases. For this reason experiments made on animals are more reliable, among the best of which are those made recently by Raudnitz, analyzed by Bourquelot in *La Médecine Moderne*, March 27, 1890.

Raudnitz's experiments were made upon a young dog, who was subjected for a number of days to various modes of feeding,—1, a diet of fresh unboiled milk; 2, a diet of mixed food, containing, as nearly as possible, the same quantities of nitrogen, fat, and carbohydrates as the milk in the preceding diet, this diet being designated as a mixed diet or the diet of repose; and 3, a diet of milk which had been subjected for one hour to a temperature considerably above the boiling-point in a Papin's digester, the pressure being one-half atmospheric above the ordinary pressure. The animal was carefully weighed before each change of diet, while the nitrogen, the fat, and the calcium salts were estimated each day both in the elements ingested and in the excreta,—that is, in the urine and fæces. The interposition of a mixed diet, or what he terms the diet of repose, permitted an accurate separation of the fæces coming from each separate diet, since the excreta from the milk diet were fluid, and more or less clear, while those from the mixed diet were blackish and almost solid. It is thus possible to estimate with considerable accuracy whether the animal increased or diminished in weight as a consequence of any one of the three diets; and, in the second place, to determine which diet was most advantageous in the assimilation of nitrogen, fat, or lime. The following tables contain the most important of the author's results:

First Series of Researches.

	Duration of the diet.	Nitrogen.		Fat.		Lime.	
		Ingested daily.	Percentage assimilated.	Ingested daily.	Percentage excreted.	Ingested daily.	Percentage in the fæces.
Fresh milk	3 days.	5.20 gr.	9.44	35.1 gr.	5.59	1.73 gr.	37.82
Diet of repose	2 days.	.....	.....	.....	.....	.....	.....
Boiled milk	2 days.	5.20 gr.	5.73	35.1 gr.	3.72	1.73 gr.	62.68

Second Series of Researches.

	Duration of diet.	Nitrogen.		Fat.		Lime.		Phosphoric acid.
		Amount ingested.	Percentage assimilated.	Amount ingested.	Percentage excreted.	Amount ingested.	Percentage assimilated.	Amount excreted in the urine.
Fresh milk	3 days.	5.14 gr.	4.9	36.3 gr.	4.36	1.7 gr.	41.3	.97 gr.
Diet of repose	3 days.	.....	.....	.....	.....	.....	.....	.....
Boiled milk	4 days.	5.14 gr.	3.4	36.3 gr.	6.25	1.7 gr.	33.1	1.01 gr.
Diet of repose	3 days.	.....	.....	.....	.....	.....	.....	.....
Boiled milk and HCl	4 days.	5.14 gr.	4.6	36.3 gr.	5.63	1.7 gr.	30.3	.97 gr.
Diet of repose	3 days.	.....	.....	.....	.....	.....	.....	.....
Fresh milk	3 days.	4.9 gr.	4.5	41.4 gr.	4.00	1.8 gr.	15.9	.87 gr.

It will be noticed that in one of the experiments of the second series Raudnitz made use of boiled milk acidulated with hydrochloric acid, the object of this being resolution of the phosphate of lime, which is to a certain extent precipitated in the boiling, the author thus hoping to increase the nutritive qualities of the milk, especially as concerns the phosphates. The amounts of ingesta are stated in their weight daily, while the figures which represent the matters assimilated or excreted are in percentages of the ingesta. It appears from these tables that the assimilation of nitrogen and of lime is more complete when the animal is fed on the fresh milk than when the boiled milk is given; while, as regards fats and phosphoric acid, assimilation seems to be identical in the two diets. From an examination of Raudnitz's methods, however, it can scarcely be concluded that his results are absolutely reliable for any element, with the exception of the nitrogen, and the difference between the results of the different series as regards nitrogen are so insignificant as to be almost unworthy of notice. Thus, for example, his method of estimating fats from the fæcal matter after drying to 80° C. by means of ether is particularly defective, since the method may give results which are capable of at least ten per cent. variation, according to the degree and duration of desiccation. On the other hand, as regards the salts, elements which are of special importance in the alimentation of children, and the elements which various authors have considered more assimilable in fresh than in boiled milk, the interposition of the mixed diet containing an indeterminate quantity of lime, which in most cases is less than that contained in milk, would predispose the animal while on the milk diet to the absorption of lime, so that the conclusion of the author as to the absorption of lime is indecisive. Finally, as is seen in the tables, the addition of hydrochloric acid to the boiled milk seems to have had no appreciable influence on the results. Nevertheless, these results possess a certain amount of interest, for they show that, if there is any difference between the nutritive value of fresh and boiled milk, this difference is so slight that it may practically be overlooked in comparison with the other advantages reached through the sterilization of the milk.

On the other hand, VASILIEFF, in an inaugural thesis of 1889 in St. Petersburg (*Journal de Médecine*, May 4, 1890), details experiments made on six healthy individuals, varying from 18 to 23 years of age, restricting them for three days to a diet of fresh milk and then for the three days following to boiled milk; and he draws the following conclusions from the results as regards the assimilation of the proteids in the fats of boiled milk as compared to that of unboiled milk. The author claims that his experiments have proved that the assimilation of the nitrogenous principles of the boiled milk is considerably less than of fresh milk,

although the difference is less marked than in the case of the fats. Nevertheless, the fæces contain considerably more fatty acids after the administration of boiled milk than after the use of fresh milk. He therefore concludes that the nutritive value of boiled milk is much inferior to that of fresh milk. He explains these differences by the hypothesis, first advanced by Schmidt, that by boiling a part of the caseine in cow's milk is transformed into hamialbuminose.

A NEW FUNCTION OF THE PANCREAS.

IN a series of notes recently published in several numbers of the *Lyon Médical*, an abstract of which has already been laid before the readers of the GAZETTE, Dr. Lépine showed that the ablation of the pancreas in the dog was followed by the production of diabetes, a phenomenon which the author and Drs. Von Mering and Minkowski attribute to the suppression of a function of the pancreas, hitherto unknown, which apparently consists in the removal from the blood, through the destruction of the pancreas, of a ferment differing from the pancreatic digestive ferments, whose function is to destroy glucose, this ferment being continually secreted by the pancreas and as continuously absorbed. At a recent meeting of the Academie des Sciences, Dr. Lépine read a paper detailing a number of experiments which seem to show that this ferment, in great part at least, is absorbed by the lymphatics (*La Tribune Médicale*, April 24, 1890).

Dr. Lépine stated that, after allowing a dog to fast for thirty-six hours, he removed the pancreas under chloroform narcosis, and then allowed the animal to die of starvation. The urine evacuated in the evening after the operation contained sugar; the next morning at eight o'clock the urine contained two and a half ounces of sugar to each quart. It was found that the sugar then gradually increased together with the urea, the amount of sugar in the urine being, as a rule, about double the amount of the latter. Dr. Lépine then injected into the jugular vein, on the first day after the operation, about 4½ drachms of opalescent lymph collected, by a fistula of the thoracic duct, from a dog which had been previously fed with a quart of milk. This injection apparently caused no ill effects, the temperature remaining unchanged. About one to two hours later there was noticed a slight diminution in the sugar and in the urea, the diminution gradually increa until the urea was more than four tim abundant as the sugar. On the follo day—that is, the second day after th moval of the pancreas—the glycosuria became intense. Dr. Lépine also found the addition of fresh chyle received fro thoracic duct of a dog in full digestion, added to an aqueous solution of glu maintained at 38° C., caused conside reduction in the amount of sugar pre This seems to prove that the chyle con a principle which destroys glucose, and, s he has obtained in addition in a dog rend diabetic a great diminution of the glyco by injecting malt diastase into the vei seems established that this principle is a ment. It further appears that this fer comes from the pancreas, for he finds the injection of chyle taken from an a in whom the pancreas had been remo does not produce diminution of glyco On the other hand, however, the liquid tained from maceration of the pancrea not serve to produce satisfactory result it was impossible to obtain an extract from microbes, and, as a consequence, s cæmia was always produced. It does however, seem absolutely certain that a this sugar ferment is absorbed by the phatics. Part is perhaps absorbed by portal vein; at any rate the author's obse tions seem to indicate in the clearest ner that the pancreas possesses other f tions than that of secreting digestive ments, and that it supplies to the econo ferment whose function is the normal struction of glucose. The value of these servations, apart from their intrinsic phy logical importance, is considerable: for are also capable of practical application, s they point to the possibility, already perh indicated by Lépine, that in cases of diab the cause may be located in the pancr and that one explanation of the product of diabetes may be found in the reduction the amount of sugar-destroying ferments creted by the pancreas.

This view is still further strengthened the fact that numerous authors, in autop on diabetic patients, have noticed more less evident change in the pancreas. T Frerichs has stated that this organ is a phied in at least one-half the cases of abetes, and Seegen, in fifteen out of th cases, has found the pancreas atrophied, seat of fatty degeneration, or choked calculi. Professor Senator also has m

in diabetics the pancreas is frequently eat of atrophy or degeneration. The experimental facts noted by Dr. Lépine, therefore, further emphasize the advisability of a ate study of the pancreas in cases of diabetes; and in the *Lyon Médicale* for May 11, Dr. Lépine reports the case of a man, ears of age, who passed daily nearly ten es of sugar in his urine, and who died pneumonia, in whom, while the pancreas appeared on first examination to be almost normal, the microscopic examination of glandular tissue showed that the acini surrounded by a sclerotic zone, characterized by the development of fibrous tissue, therefore pointing to an old lesion. a pathological change as this would ently obliterate the lymphatic spaces of gland; and, since Dr. Lépine has adduced very strong arguments in favor of the orption by the lymphatics of the ferments he pancreas, the application of this observation to the pathological history of diabetes pecially interesting.

ill another point, which is, perhaps, capable of practical application, is the observation made at the suggestion of Dr. Lépine by Lannois, who found that subcutaneous injections of pilocarpine in a young woman suffering from diabetes, when, however, no signs disease of the pancreas were present, resulted in a marked diminution of the glycosuria. As it is well known that pilocarpine is an active stimulant of the salivary glands, idea, of course, suggests itself that perhaps the pilocarpine may stimulate in a similar manner the pancreatic cells, and so lead to increase of the sugar-destroying ferment. We regard Dr. Lépine's observations of eat importance, both from a physiological d a pathological point of view, and as opening an entirely new aspect of the obscure bject of diabetes mellitus.

TABLET TRITURATES AND THE DISPENSING OF DRUGS BY PHYSICIANS.

WE publish on another page of this journal an article by Dr. E. P. Hurd, in ich attention is called to the custom, stated be a growing one, of the dispensing by ysicians of remedies in the form of tablet turates, compressed tablets, or compressed lls. This is a custom in whose favor but tle can be said, while on several grounds believe that in the majority of cases it is xcusable. Of course, in the case of the country doctor, whose practice is located, it may be, miles from the nearest drug-store, the dispensing of prescriptions by the physician becomes necessary, but we cannot but believe it is a necessary evil. In the first place, a point which is brought out by Dr. Hurd's article is in itself the strongest condemnation of this method, and that is the interest which the physician has in obtaining his medicines at the lowest price. It is needless to say that, in the competition between the different manufacturing houses, it is evident that the cheapest preparations are the poorest, and we thus have the element of unreliability introduced. A commercial element is further brought into the question, which certainly should be foreign to a physician's practice. Where the cost of the prescription is borne by the patient, the physician will order the remedy which is most exactly indicated in the case, without considering, in the majority of cases, the cost; but where he himself has a temptation to look for a profit in the sale of his medicines, he will be tempted to prescribe the remedy which will yield him the largest profit. There is thus the temptation to substitution of drugs, even more to be condemned than in the case of pharmacists who substitute one remedy for another prescribed by a physician. The stock of remedies which a physician can carry with him must of necessity be a limited one, and, although he might see a case in which a given remedy was called for, he might not have this remedy in stock, and the temptation would be strong to substitute a drug which would do *nearly as well*, instead of giving the order to be filled by a druggist.

Then, again, the position of dispenser is a profession which requires a definite course of study, and it is absurd to suppose that the doctor, in the limited amount of special education in this direction which he has received in his professional studies, is capable of judging of the quality and character of the drugs dispensed, even were not the form of tablet triturates or compressed pills of itself entirely prohibitory of any recognition of character of the remedy even by experts.

We can hardly believe that this custom is one which is destined to become at all universal.

OREXIN AS A STOMACHIC.

THE scepticism which we expressed in our last issue as to the value of orexin as a stimulant to the appetite is unfortunately strengthened by further experience. In the

Deutsche Medicinische Wochenschrift for May 15, 1890, Dr. Martins publishes an account of thirty-five different cases of the most varied nature, some normal individuals, others illustrating almost every conceivable morbid process, in which orexin was given with the view of testing its power as a stomachic.

The mode of administration was identical with that recommended by Penzoldt, the only difference being in the results. Of twenty-nine of the above cases, in five there was, to be sure, some improvement in appetite noted, but this was in all cases slight, and in no case indubitably attributable to the remedy. It, therefore, seems that orexin is masquerading under false colors, and the sooner the name "orexin" is divorced from hydrochlorate of dihydrophenylchinazolin the better.

STANDARDIZATION IN THE NEW PHARMACOPŒIA.

THE action of the Convention for the Revision of the United States Pharmacopœia, in session last month in Washington, in reference to the assaying of crude drugs and galenical preparations, is to be regarded as a step in the right direction. From the extreme personal and even violent character of the discussion of this subject, in the different pharmaceutical journals, which preceded the meeting, we feared that the true merit of the question would be obscured by a similar tone of argument before the Convention; but we feel that both the medical and pharmaceutical professions are to be congratulated on the result attained. By a very decided majority the Convention voted that "It is recommended that assay processes be appended to the descriptions of the more energetic or otherwise important drugs containing active principles, provided the therapeutic value of the drug depends upon the amount of these principles, and provided, also, that these principles can be assayed and identified with reasonable accuracy and without requiring complicated processes. The committee may attach a note stating the usual percentage of these active principles in good commercial samples of the drug, and, if it be found feasible, it may attach a requirement that the drug shall not be used unless it conforms to the stated limits.

"The committee may attach assay processes to such galenical preparations as fluid extracts, tinctures, etc., but it shall omit requirements of a definite strength or percentage of active principles, except in the case of drugs which an upper or lower limit, or both active principles is prescribed."

The question is thus practically left in hands of the Committee of Revision, from the *personnel* of that committee and marked evidence of the spirit of the meet we may be confident that, as far as is possible, the next Pharmacopœia will be first to standardize galenical preparation the more important active drugs, which admit of accurate methods of assay. Thus most ardent supporter of standardization c not but be satisfied to see the principle standardization recognized, with the as ance, further, that its extension only depe upon an increase in our knowledge of meth of assay. We thus see ground for the be that the day is not far distant when the p sician in ordering preparations of a toxic narcotic drug may be sure of uniformity activity.

Reports on Therapeutic Progre

THE PAST AND PRESENT TREATME OF RHEUMATISM.

At a recent meeting of the Royal Medi and Chirurgical Society a paper was read DR. M. CHARTERIS on "Rheumatism: Treatment Past and Present," with spe reference to recent experimental research salicylic acids and their salts (*Lancet*, F ruary 15, 1890). The author commen by giving a general *résumé* of the treatm of rheumatism previous to the introducti of salicin and salicylic acid. First came alkaline treatment, next the blistering joints, then the expectant method, then lowed a period of chaos, and, finally, sali and salicylic acid were introduced. Det of an experimental research as to the acti of salicin, salicylic acids, and their salts sodium were given. It was found that s cin in doses of 30 grains, salicylic acid (nat ral) in doses of 10 grains, and salicylate sodium (natural) in doses of 32 grains h no deleterious action on rabbits weighing t pounds and a half; but the artificial salicyl acid in doses of 10 grains, and artificial s cylate of sodium in doses of 18 grains in dinary use caused the death of rabbits of t same weight. On July 4, 1889, an impur was discovered in artificial acids which very soluble, and had an appearance li coarse flour. It had not yet been identifi

was probably derived from creosotic
l. 1 grain of this impurity proved fatal
rabbit weighing two pounds. As the re-
of a further research, it was found that
impurity could be removed by the follow-
process: Salicylate of calcium was first
ared, then decomposed by hydrochloric
, setting free salicylic acid, which was
equently purified by recrystallization.
appearance of the purified acid was in
y respect similar to that of the natural
ty. The physiological action of this
ified acid in 15-grain doses on rabbits
detailed. There was no paralysis, not
depression, after the last injection, and
abbit was able to run easily. He con-
ed this physiological action with that of
best samples of artificial acid, which, in
lar doses, proved fatal to one rabbit, and
o others caused marked prostration and
lysis, but not death. The paper con-
ed with practical deductions drawn from
e investigations.

R. MACLAGAN said that many who had
sodium salicylate had seen deleterious
cts from it, and had hence abandoned it
avor of salicin. He had tried many other
icial compounds of salicylic acid besides
alicylate of sodium, but he had come to
conclusion that salicin gave the best re-
. If the results which Dr. Charteris had
ined were confirmed by other observers,
ode of obviating these obnoxious disturb-
es of the heart and nervous system had
n discovered. Salicylic acid might be
ared from a natural compound, but he
tioned whether the purified artificial acid
ld be obtained at the price of ordinary
cin. Senator, of Berlin, had stated that
cin was broken up in the system into sali-
c acid and something else, but he was not
re that any proof of this had been brought
ward. His own belief was that all the
cyl compounds were antirheumatic; that
cin was the best of these, and gave rise
no unpleasant effects, and that next to this
e salicylic acid was the most valuable, but
t its price was a bar to its general adop-
n. The benefit of these drugs was not
e simply to their antifebrile powers, but
y also distinctly combated the poison of
umatism. He ordered 30 grains of sali-
every hour for six hours, and found that
from twelve to twenty-four hours the pain
d fever had disappeared. It usually took
ounce of salicin to effect a cure.

SIR D. DUCKWORTH said that the matter
as one which concerned both chemists and bedside physicians. Professor Latham, of Cambridge, had insisted on the necessity of using salicylates prepared from a pure source. He himself had largely used the commercial pure salt in hospital practice, but he could scarcely recall an untoward result. He was referring especially to such results as cardiac depression, for tinnitus and other minor discomforts could scarcely be reckoned as drawbacks compared with the obvious advantages of the drug. He thought that the price of the purer drug when used boldly would be considerable. He was in the habit of prescribing 20 grains of salicylate of sodium every six hours, the second dose being given three hours after the first.

DR. LUFF referred to the method of preparation of artificial salicylic acid. Carbolic acid was saturated with caustic soda and heated, and while in this state carbonic acid gas was passed over it. If the temperature were too much raised, an isomeric variety of salicylic acid might be produced which might be harmful. He asked if Dr. Charteris intended to make an organic analysis of the impurity he had found. The impurity had been separated by fractional precipitation and fractional crystallization; this was the usual process adopted, and he inquired if any other method of purification had been used.

DR. SHAW said he believed that the artificial salicylate of sodium had a much greater efficacy than the natural salt. He had been watching for some time the effects of treatment at Guy's Hospital under salicylate of sodium and salicin respectively. He had seen delirium, hemorrhage, and tinnitus aurium occur with both. He admitted that salicylate of sodium was more liable to produce toxic effects, but claimed that it possessed greater efficacy in combating the rheumatic poison.

DR. A. GARROD said that since the introduction of these drugs the rare results of rheumatism had been attributed to the toxic effects of them. From an analysis of cases treated years ago by the alkaline and expectant methods, he found that transient albuminuria and urticaria occurred just as frequently as they did at present. The salicylate of sodium no doubt had a slight deleterious action, and the removal of the impurity was a step in advance. He had prescribed salicin frequently to out-patients, but had seen no bad results; perhaps because large doses had not been used.

DR. HAIG preferred salicylate of sodium to

other preparations, as it was more agreeable to take; in his experience it did not possess much toxic power, though he had given it in large doses for periods as long as a year. He noticed that some specimens of the drug produced giddiness and gave to the breath a smell of carbolic acid.

SURGEON-MAJOR MYERS had given salicin in large doses; his experience was that the drug depressed and gave rise to a prolonged convalescence. In the medical school at which he was educated three physicians treated rheumatism in three different ways, and each claimed great success: one used opium, another strychnine, while a third relied on alkalies and rest. When the salicylates were introduced, their chief recommendation was said to be their antipyretic power, but that point now seemed to be abandoned.

DR. TAYLOR said that more would be known on the subject when pure acids had been prepared and used practically. He prescribed 20 grains of the salicylate every two hours, and had frequently seen inconveniences, such as delirium, result.

DR. LITTLE ordered 10 grains of salicylate of sodium every hour or two hours without producing discomfort.

DR. MITCHELL BRUCE said that in his experience delirium was uncommon. At Charing Cross Hospital 15 grains were given every four hours, and these doses appeared sufficient, but in a certain number of cases they required increasing by half. In two cases which he had watched, hæmaturia appeared to be a result of the administration of salicylate, and he thought that some of the other symptoms complained of might really be renal in origin. The paper suggested that much was still to be learnt concerning other derivatives, such as antipyrin and antifebrin.

DR. LAUDER BRUNTON said that in considering this question two factors had to be taken into account,—the dose given and the substance used; and the nature of the substance used had undoubtedly a great deal to do with it. Meta- and para-oxybenzoic acids were isomers which possessed very little physiological action. The quality of the carbolic acid used in the preparation of salicylic acid was probably a greater source of danger, for from impure carbolic acid oxytoluic acid and other substances of that order might come. The German patent for the manufacture of salicylic acid had now expired, and it would probably now be made in this country. The Pharmacopœia Committee could then specify a proper method for its manufacture.

DR. CHARTERIS, in reply, said that he had failed to obtain a pure salicylic acid in the market. The dialyzed acid said to be pure proved equally fatal to rabbits. It was not a sufficient description to specify the melting-point; the characters of the crystals should likewise be defined.

HÆMOGLOBIN COMPOUND, OR BULLOCK'S BLOOD IN THERAPEUTICS.

A paper was read before the Philadelphia County Medical Society, Wednesday evening, March 26, by F. E. STEWART, M.D., Ph.G.; on the "Use of Bullock's Blood as a Therapeutic Agent," in which the author called attention to a preparation consisting of fresh defibrinated blood preserved in the fluid condition by extract of malt, whiskey, and glycerin. The author referred to his original introduction of *Langin's Bovinus Exsiccatus*, in 1881, to the work of Dr. Andrew H. Smith, of New York, on the use of defibrinated blood for supplementary rectal alimentation, to the blood powders of Le Bon and of Querder, both of Paris, France, and then went on to describe his new preparation in the following language:

Hæmoglobin Compound.—The objection to all these dried powders of blood, however, is (1) their insolubility, (2) their odor and taste.

If blood is dried at a high temperature, an odorless and tasteless powder results; but it is insoluble. If a temperature lower than this is employed, yet sufficient to cook the blood, a peculiar odor and taste develop, not found in fresh blood. If a temperature below the coagulating point of albumen is used, the resulting product is free from disagreeable odor and taste, and quite soluble; but in time the scales or powder become so dry as to resist the action of solvents, and then their solution is attended with difficulty. For these reasons Dr. Stewart has instituted a great many experiments for the purpose of finding some way to preserve this blood unchanged and in its fluid condition. These experiments have finally proved successful.

The author described the preparation of the compound and its physical appearances. The therapeutic properties were then referred to, quoting from the literature of various investigators who have written on this subject. The sum of the reports from the authorities quoted were to prove that bullock's blood has

n successfully used in the following classes cases: Persons who by reason of want of etite or a languid state of the digestive tions cannot take food; in fever cases to ate a tendency to death by asthenia, and prestall a degree of prostration dangerous fe; in the treatment of various infantile ases, such as diarrhœa, mal-nutrition, etc.; nic dyspepsia; cases of serious and fatal anic diseases either of the stomach or er organ to support the patient and lessen sufferings when all hope of cure is gone; the treatment of diseases of the eye as an unct to other means when the system is in epraved condition; in so-called muscular matism, associated with indigestion; in ious neuralgic affections; in surgical cases; eneral weakness after fevers; in hemorges from any cause; in phthisis; in neuhenia; and in convalescence. In fact, author claims that the remedy is indid in all cases of weakness or debility, no tter what the cause may be.

his summary was founded on the reports fifty cases treated by the author, and by ious other observers in America and Eue. Several of these cases were referred n detail to illustrate the use of the rem. One point in this connection is worthy notice, and that is the smallness of the e recommended. 15 drops, in water, k, cream, or flaxseed-tea, to be gradually reased to a tablespoonful, three times a y, were recommended. In this dose it rees well with the most delicate stomach, d its use, according to the author, is folwed by surprisingly favorable results.

In his remarks, the President of the Soety, PROFESSOR W. W. KEEN, said that the vestigations of Dr. Andrew H. Smith, of ew York, were well known to the profesn, and that the introduction by Dr. Stewart this new preparation of the blood ought to followed by its trial in the hands of the embers and subsequent report, so that the ue value of the product might be brought t by more extensive investigation.

THE TREATMENT OF DROPSY OF CARDIAC ORIGIN WITH CALOMEL.

A few years ago the diuretic properties of alomel attracted a great deal of attention, t it seems since 1886–87 to have been enrely neglected, perhaps on account of the eat number of new remedies which have lled for investigation. Its properties as a diuretic, however, are again emphasized in the report of three cases of cardiac lesion by DR. E. G. GARVENE (*Therapeutische Monatshefte*, April, 1890), resulting in severe dropsy, in which the use of calomel produced the most striking relief. In these three cases digitalis, caffeine, and strophanthus had been used, and almost without effect. Calomel was, therefore, substituted in doses usually of 1½ grains every two hours, with an almost immediate increase in the diuresis. In some cases slight diarrhœa was produced, but no symptoms of stomatitis occurred, perhaps through the regular employment of gargles of potassium chlorate and brushing of the gums with tincture of myrrh.

ON THE PRESENT POSITION OF ABDOMINAL SURGERY.

At the meeting of the Medical Society of London, held April 14, 1890, MR. MEREDITH, as arranged, inaugurated a discussion by an address on "The Present Position of Abdominal Surgery" (*British Medical Journal*, April 19, 1890). He observed that one could not do otherwise than ask what had been the causes of the wonderful advances made in abdominal surgery during the last ten years. The present range of abdominal surgery included the treatment of injury or disease of every organ within the abdomen and even the peritoneum itself. So extensive a field for the surgeon contrasted strongly with what obtained ten or twelve years ago, when the knife of the operator was restricted almost exclusively to operations for ovariotomy. It was in 1877 that his own attention had been first directed to abdominal surgery, and at that time operations for ovariotomy were the only ones thought of in this region. It is true that other abdominal and pelvic tumors were sometimes touched, but this was mostly the result of accident, in the sense that it resulted from a mistaken diagnosis. The mortality, even of ovariotomy, was very high. Thus, according to the statistics of Sir Spencer Wells, in 1876–77, of one hundred and fifty operations there were twenty-nine deaths, equal to 19.3 per cent., and of this number no fewer than twenty-three were due to septic peritonitis. The mere prevalence of such a mortality was sufficient of itself to check the progress of abdominal surgery, and its causes were themselves worthy of separate consideration. One of the causes was undoubtedly a defective method of dealing with the pedicle, and an inadequate conception of the absorptive powers

of the peritoneum, both for good and evil. The use of the clamp, again, was undoubtedly a direct factor in the production of this large mortality, and in London, at all events, the intraperitoneal treatment of the pedicle by ligature was practically restricted to cases in which the shortness of the pedicle rendered the use of the clamp inadmissible. The danger of the clamp lay in the opportunity it afforded for septic infection, the risk of subsequent hemorrhage, and the risks incidental to a long and tedious convalescence. These were sufficient reasons for condemning it long before 1878, when the plan was finally abandoned in favor of the intraperitoneal ligature. The next important advance in abdominal surgery was the introduction of Listerian practice into this department, which their President had been largely instrumental in effecting in 1877. He expressed his conviction that the teachings of Lister, by drawing attention to the value of surgical cleanliness, had, directly or indirectly, done more to promote abdominal surgery than any other factor during the last ten years. Drainage and the flushing of the peritoneal cavity had, in fact, revolutionized the practice of abdominal surgery. Drainage was at first attempted by means of glass tubes of unnecessary size and clumsiness, and their use was at first looked upon with little favor. Moreover, the methods adopted to prevent putrefaction of the fluids which oozed away through the tube were most unsatisfactory. The employment of tubes of smaller calibre, and duly protected against septic decomposition, had done much to render drainage safe and efficacious. The plan of flushing the peritoneal cavity, associated with subsequent drainage, had proved of immense value in ovariotomy and other abdominal operations, especially when undertaken for injury to or rupture of the hollow viscera. However explained, the success of this combined plan of treatment could not be denied. The addition of antiseptics to the water used was fraught with the risk of poisoning, and could do no good; even the precaution of using water previously boiled was not essential to success, provided a fluid was used which was not itself contaminated with septic material. So long as no decomposing material was left in which the micro-organisms could develop, the peritoneum—thanks to its wonderful powers of absorption—was capable of getting rid of the small amount of fluid that remained behind, and any stray organisms were thus deprived of the moisture requisite to their rapid development, and were, moreover, themselves probably absorbed and excreted. These exceptional effects of flushing the peritoneum and drainage illustrated two other points, namely, the inadvisability of administering opium and the advisability of giving saline purgatives in the presence of certain symptoms pointing to incipient peritonitis. With regard to the administration of opium, he said it was a mistake, owing to the restraining influence exerted by it on absorption and excretion. Its use after abdominal operations ought to be strictly limited, and, as a rule, patients were much better without it. The *rationale* of the administration of saline purgatives in the early stage of peritonitis could only be explained by their promoting absorption and excretion. Of course, if there were an obstruction or an impaction, purgatives could only do harm, and in such cases he preferred belladonna, which usually overcame the difficulty. The gradual improvement in the results after ovariotomy was evidenced by the records at the Samaritan Hospital for three separate periods during the last twelve years. In 1878–79 there were one hundred and seventy operations, of which twenty-four proved fatal, equal to 14.1 per cent.; in 1886–87 there were one hundred and forty, of which ten died, equal to a mortality of 7.1 per cent.; and in 1888–89, of one hundred and thirty patients operated upon only six died, equal to a rate of 4.3 per cent. The figures 4.3 compared with 14.1 might be taken as a measure of the improvement effected within the last ten years. With regard to the treatment of uterine tumors, ten years ago the results obtained in this branch of abdominal surgery were highly unsatisfactory. The treatment of the uterine stump, whether by intraperitoneal or extraperitoneal pressure, was invariably followed by terrible mortality, due either to hemorrhage or to septic poisoning. Of seventeen cases operated upon by Mr. Spencer Wells prior to 1880, eight proved fatal, being at the rate of forty-seven per cent. In consequence, interference with uterine tumors was undertaken only when the growths themselves were thought likely to prove fatal. Then came the introduction of Koeberlé's *serre-nœud*, which was first used by Keith in 1873, but was not appreciated in London until long after. With respect to hysterectomy performed at five hospitals during the last four years, there had been eighty-two cases with fifteen deaths, equal to a rate of 18.2 per cent. These figures indicated a reduction of sixty per cent. on the former rate. His own results in connection with this operation were six deaths out of thirty cases; out of these, four occurred

the first ten, and the remaining two among the last twenty, thus giving a markedly diminished mortality during the last series. Success this procedure depended largely upon familiarity with the various details, especially with regard to the treatment of the stump. Excision and removal of tumors involving the upper portion of the uterine body, even if of large size, was now commonly not a matter of any serious difficulty. In a certain proportion of the cases, however, complications arising from the growths being beneath the broad ligament, leading to displacement of the bladder, etc., necessitated extensive enucleation in order to form a pedicle for the application of the *serre-nœud*. In such cases the removal of the uterine appendages could sometimes be performed; but as often as not this alternative was not practicable, and the more serious operation had to be done. The chief danger was hemorrhage, to be avoided, in the first place, by securing the ovarian vessels on either side of the uterus, by transfixion and ligature of both broad ligaments below the appendages, followed by the use of pressure forceps above that level. The next thing was to free the displaced bladder from its connection with the surface of the tumor. He insisted upon the importance of including in the ligature both ovarian arteries, also of uniting the free borders of the divided capsule. The ultimate success of these operations depended upon the proper adjustment and management of the stump and upon the precautions taken to protect the peritoneum. The tumor having been taken away, the remaining portion of the stump had to be dealt with, and the question of the removal of the uterine appendages had to be considered. The treatment of pedunculated tumors of the uterus was a very successful procedure in properly selected cases, and the removal of the appendages for the arrest of hemorrhage due to fibroid tumors was an operation the efficacy of which was undoubted. Unfortunately, however, complete removal of the ovaries and tubes was not always possible, hence the occasional necessity for resorting to the more radical measures. The chief point was to avoid puncture of the frequently distended vessels of the pampiniform plexus and the complete removal of all ovarian tissue. It was not sufficient to strip the broad ligament clear of the base of the ovary, for some ovarian substance might remain on the distal side of the ligature and lead to recurrence of the hemorrhage, and render recourse to hysterectomy advisable. Accepting the theory of the influence of the ovaries on menstruation, he said the continuance of the hemorrhage must be due to some ovarian tissue having been left behind. He alluded to Mr. Tait's views with respect to the influence of the tubes and also to the possibility of there being a special nerve branch which might be destroyed during the operation. He expressed a hope that further light might be shed on this point in the course of the debate. The mortality of these operations in the hands of skilled operators was very small, only two per cent., according to Mr. Tait's recent work on the subject. The removal of the uterine appendages for disease raised questions of very serious importance, particularly because the operation in a large proportion of the cases was directed to the relief of affections not in themselves menacing life. If the operation itself were absolutely devoid of danger, the matter might perhaps be left to the conscience of the operator, but as, even in the most skilled hands, there was a certain percentage of unavoidable mortality, the matter assumed a different aspect. The main question in respect of this subject was the value of the operation, and this had to be considered (1) with reference to the nature of the cases operated upon, and (2) as to the ultimate result of the treatment on the welfare of the patients. An analysis of one hundred and forty-seven cases of removal of the appendages published by Mr. Tait showed that there were forty-five cases of pyosalpinx, nine of hydrosalpinx, forty-three of chronic ovaritis, one of exanthematous ovaritis, and two of ovarian abscess. This was fifty-four per cent. of cases of tubal disease, and forty-six of chronic inflammatory conditions of the ovaries. He observed that it was worthy of note that in these cases the suffering was often quite out of proportion to the lesions, but the converse was equally true. He dismissed the difficulties of the differential diagnosis in these cases, and insisted upon the inadvisability of active intrauterine treatment. He admitted that there was great difficulty in defining exactly the cases which called for surgical interference, the propriety of which depended on social and other considerations, as well as upon the nature and extent of the disease. He urged that no radical operation should be advised or undertaken in these cases until a course of palliative treatment had been given a fair trial. He asked for further information on the subject of the ultimate consequences of removal of the appendages, as to which little was at present definitely known. He then passed on to discuss the improvements effected in the diagnosis and treatment of the various forms of ectopic

gestation, and the views held by authorities on the pathology of this terrible abnormity. He pointed out, in reference to the substitution of Porro's operation and the modified Cæsarean section for craniotomy in obstructed labor, that the choice of the method would depend upon the predilection of the operator, the results obtained by both in skilled hands being satisfactory when performed at full time. He said the surgical treatment of tubercular peritonitis was now generally recognized, and was of utility in checking the development of what appeared, for a time at any rate, to be a local disease. The results of surgical interference in suppurative peritonitis had, so far, not been satisfactory, probably because the peritoneal mischief was usually secondary to suppurative nephritis, which could not be relieved by mere drainage. The treatment of pelvic abscess by abdominal incision was a vast improvement upon the pelvic operation, especially as it was often possible to get at the sac without opening the peritoneum. In no department of abdominal surgery had greater progress been effected than in dealing with calculous and suppurative diseases of the liver. He passed in review the various operations directed to the relief of these conditions and the conditions which should preside over the selection of particular methods of procedure. He quoted the contributions by Mr. Godlee, on the "Surgical Treatment of Hepatic Suppurations" (*Journal*, vol. i., 1890, pp. 61, 120, and 172), as an excellent summary of what had been done in this branch. The advance effected during the last ten years in renal surgery was not less marked, and had been largely brought about by their President. He insisted upon the necessity for devising means of arriving at an early differential diagnosis between tumor and calculus, and urged the advantages attending early surgical measures, not only in these, but in many other affections of this organ. He alluded to the diagnostic importance of the abdominal incision in these cases in preference to the lumbar incision, in which the surgeon had to be guided by what he could feel, in cases where he had need of the assistance of all the senses. He concluded by a few remarks on the surgery of the spleen and pancreas, the results of which still left much to be desired. As, however, the spleen might be removed without any necessary detrimental effect on the economy at large, he hoped that further progress would shortly be made in the diagnosis and treatment of diseases of this organ. He added, in thanking the Fellows and members for their attention, that he hoped his paper would pave the way to a bate worthy alike of the ancient Society which they belonged and of the world-w reputation of British surgery.

The PRESIDENT suggested that atten should be especially directed to the follo points: As to the operative defects of hyste tomy; facts bearing on the recurrence of m struation after ovariotomy; the ultimate h tory of cases of oöphorectomy; the e diagnosis of ectopic gestation; the relat merits of Porro's operation, and the m methods of performing Cæsarean secti Then as to the complete closure of the g bladder and the relative value of cholecy omy and cholecystectomy, and as to the moval of gall-stones from the ducts by incisi etc. As to the removal of the kidney in hy nephrosis; the differential diagnosis of r calculus and tumors; the exact localizatio to the side, of renal lesions; as to the ulti results of mere draining of the kidney in s purative disease; also as to the ultimate h tory of cases which had recovered from sp ectomy; and, lastly, as to the symptom early disease of the pancreas. He explai that the subject was so vast that, unless s definite plan were laid down, it would be d cult to deal with it satisfactorily.

DR. GRIFFITHS (Swansea) said there w ten important points to bear in mind in dominal operation; in fact, ten surgical c mandments bearing on the treatment of wound,—1, the arrest of hemorrhage; 2, avoidance of mechanical irritation; 3, guarding against infection or contagion; the proper apposition of the edges of wound by aseptic sutures; 5, to provide necessary drainage; 6, to apply gentle pre to prevent congestion and exudation; 7, to g the most perfect physiological rest; 8, to cure the best possible position of the part promote comfort and healing; 9, to prov for hygienic surroundings; and 10, to att to the patient's general health. If these w attended to and the condition of the pati was up to the average, the operation could fail to prove satisfactory. He declared firm belief in the practices inculcated by L ter. His own experience was limited to fi six cases of operation for ovarian tumor, cluding three oöphorectomies for hemorrh due to fibroid tumor of the uterus. He very stringent in the use of antiseptics, never used a drainage-tube in ordinary ova otomy, considering it worse than useless. admitted, however, that there were cases which it was indicated, and he regretted

ing used it in one case of his own. There e six deaths among the fifty-six cases, in e of which the operation was undertaken malignant disease; the fourth was an "im-ible" case for operation, in the fifth the der was ruptured, and in the sixth the ent died from fatty degeneration of the t. He had not had a single death from icæmia.

R. MAYO ROBSON (Leeds) said he only posed to speak as to the result of operations on the subject generally, without going the question of individual diseases. What should aim at was to establish general ciples for guidance. He expressed his titude to the leaders in abdominal surgery, se teachings and experience had enabled nger men like himself to start from their h platform. At the Leeds meeting of the ish Medical Association he had brought ward two hundred cases of abdominal oper-ons, and he had since added considerably the number. Of these, sixty-one were oper-ons for ovariotomy, and of these two died, these were apparently very unfavorable es; in one of them intestinal obstruction ervened at the end of a week, and if this curred now he would reopen the abdomen endeavor to ascertain the cause. The er death was from exhaustion consequent removal of a suppurating multilocular cyst, herent to all the surrounding parts, and the fuse drainage had determined fatal exhaus-n. The fact that he saw names of equal eight on both sides in reference to the em-loyment of antiseptics led him to think that ere must be some common ground, and that ound he thought was the value of extreme gical cleanliness. While he might dis-ense with the spray if operating in the coun-y, in a pure atmosphere, he hesitated to do ithout it in a general hospital in which the rroundings were not of the purest. He cer-inly felt safer when he used the spray, not rected straight at the abdomen, but pointed to the air over the region of operation. With reference to the contention that abdom-nal operations ought not to be performed in a eneral hospital, he denied that there was any alid reason for the suggestion. He main-ained that it was possible to obtain results in general hospital equal to those at a special ospital, or even in private practice. He did not argue from mere belief, but he had statis-ics which would compare favorably with those special hospitals and elsewhere. Of sixty-ne cases of ovariotomy, two died, and in the ndition described by Mr. Meredith as an extremely serious operation,—namely, the removal of diseased appendages,—he had operated thirty-four times without a death. He had also five cases of abdominal section for tubercular peritonitis in which he had opened and drained without a death, and ten cases of pelvic abscess treated by abdominal section also without a death. Further, he had twelve cholecystotomies without a death, and two cholecystectomies, operated upon under the impression that there were gall-stones. One turned out to be malignant disease of the head of the pancreas, and the patient died from hemorrhage, which set in three days after the operation. Within three weeks he had a similar case, but on that occasion he tied every vessel instead of trusting to pressure forceps, and no such mishap occurred, though the patient ultimately succumbed to malignant disease. He denied that general surgeons were more exposed to have their hands contaminated with septic material than the surgeons at special hospitals. He urged that gynæcologists particularly were very liable to come into contact with infective cases in the course of their examinations; the argument, therefore, would not hold. The real question was as to whether general surgeons could perform these operations successfully. With regard to the removal of the appendages for myoma of the uterus, out of a large number of these cases he had only seen the hemorrhage persist in one. In this case, although after the operation the uterus had diminished in size, and had once more become a pelvic organ, it had since begun to grow again, and now reached above the umbilicus, so that he had advised the patient to undergo hysterectomy. With regard to the ultimate result of removal of the appendages for disease, he said these cases must be divided into two classes,—Battey's operation, in which the ovaries were removed to obtain a physiological result; and Tait's operation for the removal of diseased appendages. His results with the latter operation had been eminently satisfactory, but, as Mr. Tait had pointed out, they must not look for an immediate result. They must wait for a year or eighteen months, for the final result would not be noticed until the menopause had been thoroughly established. Battey's operation, in his hands, had yielded results eminently unsatisfactory in every way. The nervous symptoms had simply shifted to some other part of the body, and he would not again be inclined to remove ovaries unless he had distinct evidence of their being diseased. With regard to tubercular peritonitis, his experience was that if there were fluid

when the peritoneal cavity was opened, then draining it and washing it out did good. If, on the other hand, the intestines were simply matted together by tubercular matter, the procedure hardly afforded any relief. In regard to pelvic abscess, he believed that unless the abscess absolutely pointed in the vagina, opening the abdomen was by far the best course. He had never had reason to regret having adopted this method in his ten cases.

Mr. John W. Taylor (Birmingham) said he would briefly direct attention to several points in his own experience in reply to the question of the President, bearing on the diagnosis of extrauterine pregnancy in its early stages; he had succeeded in doing so on two occasions. There was, indeed, not much difficulty; in both the presence of a retro-uterine tumor, possessing all the characters of a distended Fallopian tube, associated with the early signs of pregnancy, obviously pointed to the diagnosis. On the broad subject of the evening's debate, he said that many of the dangers associated with their work as abdominal surgeons, and not a few of the fatal results sometimes met with, were largely preventable; they had, therefore, to consider the means of perfecting their work. He insisted upon the necessity for early surgical intervention when this was called for, and he said there was room for a good deal of improvement in this respect. He mentioned a case of papillomatous cyst of the ovary which had been known to exist for two or three years, but for which nothing had been done until rupture took place, and it was sent to him as urgent. It would, in such a case, have been much better for the surgeon and the patient to have operated long before and without waiting for rupture. They were all agreed as to the importance of cleanliness, but there were several problems to be solved in hospital management before they could hope to attain the maximum of success. He pointed out that abdominal cases appeared to be peculiarly sensitive to influences which would not have any import in the ordinary run of surgical cases, and this was a point which ought to be borne in mind. With reference to the influence of kidney-disease as affecting the mortality after surgical operations, he said that he had operated when the urine had been markedly albuminous without any bad result, but he remembered two cases in which kidney-disease seemed to have precipitated the sequel. On carefully reviewing his own work, all his most anxious cases appeared to be affected in one way or another by the factors which he had mentioned.

Mr. Frederick Treves said he should confine his attention to two points. The first concerned the technical details of the operation for hysterectomy. Before mentioning what appeared to be the better plan of operating, he said he wished to point out that there was really nothing special in abdominal surgery,—that is, there was nothing peculiar about it. The common principles that influenced general surgery held good in abdominal surgery, and if at any time a Herbert Spencer of surgery came to write the first principles of surgery, it would then be seen that they were to all intents and purposes identical. The opening of the peritoneum in peritonitis and allowing the fluid to escape, washing out the cavity afterwards, seemed, it was true, to open up a new field for surgical procedure, but it in no way really differed from the ordinary treatment of abscess elsewhere. The whole history of ovariotomy was only the history of the treatment of simple tumors. Just as with tumors years gone by, the pedicle had at one time been cauterized and then clamped, but the time had come when the thing was done cleanly and efficiently, and that was where ovariotomy was at present. The present position of abdominal surgery merely amounted to this, that a certain remarkable reformation of the methods of treating wounds had rendered it possible to apply the general principles of surgery to the abdomen,—only this and nothing more than this. He said he mentioned this because it rendered intelligible what he was about to say with reference to hysterectomy. He said he must be allowed that there were still some cases in which the extirpation of the uterus with the tubes and ovaries was a justifiable operation. It was a vexed question, but he thought it might be taken for granted at present. In his practical experience he had endeavored to treat these cases as he would a large external tumor growing from some part of the uterus. He asked them to imagine such a tumor growing from the back of the buttock. It would be treated on a certain definite plan, and that when applied to the abdomen had given excellent results. The blood-vessels going to the great mass were not numerous and were well known, and were, moreover, easy to find and easy to ligature. He took it that the ovarian arteries ought always to be tied, though the ovarian branch of the vaginal artery might be more difficult to find, and only be come across late in the operation. The ovarian arteries having been ligatured, the broad ligament was divided and the neck of the uterus was cut across, hemorrhage having been pre

ed against by the application of an elastic ture, and at last there swept from one side he pelvis to the other a huge gash in the toneum, and in that gap certain vessels re- ed to be ligatured. That gash in the peri- um was closed in such wise that when ed there was a seam running right across base of the pelvis. He compared his pro- re with the use of the *serre-nœud*, which, out exaggeration, was, he said, a barbarous hod, and really belonged to the Middle s. The method of dealing with any or by begging the question of hemor- e and ligaturing the whole until it pped off by gangrene, was unsurgical and rd. The position of the *serre-nœud* in ect of hysterectomy was that of the clamp variotomy. His own results on the plan down had been admirable. It was ad- ed that there was no class of cases in ch complications were more likely to arise in these cases of tumor of the uterus, but ventured to say that if there were any kind mor inside or outside of the body, around ch a *serre-nœud* had been passed, that pedi- could most certainly have been treated by ple surgical measures. Even if fifty liga- s were required, that plan of dealing with pedicle was better than by means of this outh piece of metal, which reminded him he whip-cord formerly applied to the tongue torsion. With reference to the treatment hat form of extrauterine fœtation, in which fœtus had died, one might imagine that the had been opened, the fœtus had been re- ved, and nothing remained but the placenta d sac. He thought that, on common surgi- l grounds, not only should the placenta be moved, but also every trace of the sac. me persons would say that this was difficult, not impossible, but he pointed out that the must necessarily be of recent formation, d therefore flimsy, and the adhesions could t be of more than moderate strength. It ght, therefore, to be reasonably easy to ry out this plan of practice. He had had ee cases within eighteen months, in all of hich he had removed every trace of the pla- nta and sac, cleaned out the pelvis, and osed up the abdominal wound, without rainage, and the patients had recovered in bout the usual time required for convales- nce from an ovariotomy. As to the sur- ery of the pancreas, he believed that no se of tumor of the pancreas had ever been ntentionally operated upon in this country, w the disease had not been diagnosticated. they had paid a little more attention to the remarkable paper by Senn on the subject there would not be so much difficulty in arriving at a diagnosis. He recalled the case, in a certain hospital, of a man with an enormous belly, which was said to have reached that size in two months. It was popularly supposed to be a sarcoma. They obtained the man's consent to an exploration, and they found that it was an enormous cyst of the pancreas, which was opened and its contents evacuated, and it healed up without complication or trouble of any kind. He hoped that when Mr. Meredith made a further communication to the Society he would take up the question of the manner in which different cysts in the belly were to be dealt with, seeing that there was an enormous difference in the behavior of such cysts after evacuation.

MR. SKENE KEITH said that in the removal of pyosalpinx one expected recovery to follow in a moderately short time. The few cases he had seen had all recovered very rapidly. The other cases of salpingitis, ovaritis, hydrosalpinx with adhesions and varicosity of the veins of the pelvis, which had so much to do with the sensation of dragging, the pain, and the general discomfort, got better almost invariably, and ultimately the patients became as well again as they had ever been. It was a mistake that was often made not to warn patients and their friends that they would be a very long time getting better. Patients put up with the idea of a little waiting if told beforehand, but otherwise after six months or so they began to get restive. He mentioned the case of a patient upon whom he had operated some months ago and who was not as well now as she was before the operation, so far as strength was concerned. She, however, was free from the pain and the vomiting, and in a couple of years that woman would probably be as well as ever she had been in her life. He insisted upon the fact that these women with diseased ovaries belonged to a "fragile" class, and had probably never been able to do as much as other women, and this must be borne in mind in formulating expectations. One reason why they took so long to get better was that they had been a long time ill, and had for years been gradually going down-hill. Naturally, therefore, it took them some time to pick up again. He agreed with the last speaker in what he had said in reference to hysterectomy, but there were cases in which the clamp could not be dispensed with. They could not always spare the time to get the stump thoroughly under the ligature. The method of compression, so far as they had got, was simple

enough by means of a double screw clamp. Another point was as to the ease with which the vessels could be tied. He reminded Mr. Treves that though in some cases it might be possible to pick up and name the vessels, it was not always so, and they often had to deal with a large number of vessels all as large as the radial artery, which they were glad enough to tie without giving them a name. He thought the clamp had been unnecessarily abused. The clamp and antiseptics came in together, and if they made sure that no putrid matter could trickle down to the peritoneum—a contingency which was usually amply provided against—he thought they might get as good results in ovariotomy, or in the removal of the appendages, with as without it. At the same time he did not advise it except in certain cases. He wished to draw attention to the good Listerism had done in bringing about habits of surgical cleanliness. He mentioned the story of a gentleman who, before assisting at an ovariotomy, was asked to wash his hands. He rather indignantly said it was unnecessary, he had washed them in the morning. When, however, he was told that the water contained ten or twenty per cent. of this or that antiseptic, he did not hesitate or feel hurt at being asked to perform his ablutions.

THE VALUE OF CODEINE.

Dr. G. Kobler has made a number of experiments in the clinic of Professor von Schrötter, in the Vienna Hospital, as to the value of codeine in controlling coughing in cases of tuberculosis of the lungs and larynx (*Zeitschrift für Therapie*, April 1, 1890). The desirability of obtaining a remedy which in such cases may be substituted for morphine is very evident, from the fact that many patients are incapable of taking morphine. There are many cases where the continued employment of morphine in ordinary dose is quite impossible, and recourse must then be made to such remedies as extract of hyoscyamus, extract of cannabis indica, and the like, which too often prove themselves to be without value.

As the result of his studies, Dr. Kobler states that codeine far surpasses all the latter remedies, both in the reliability and safety of its action; while it is likewise, as a rule, free from unpleasant after-effects, though occasional complications attend its use. Codeine is an opium alkaloid, generally regarded as possessing but little narcotic power, and best known as a more or less valuable remedy in diabetes mellitus.

Codeine occurs in brilliant white cry with a bitter taste, which are only with culty soluble in water (in 80 parts of wat 60° F.). In Dr. Kobler's experiments remedy was given systematically to than seventy patients of different age doses varying from ½ to ¾ of a grain, amounts given in twenty-four hours var from two to three grains. Smaller amo failed to produce any apparent effect, and a rule, ½ grain was usually inefficacious, ¾ of a grain represented the quantity ally given. The author adds that in no stance, even in the constant administrat of this dose for six weeks, were any sympt of poisoning observed. At first the re was given in pill form, later in the form powder, and frequently in a mixture, bitter taste of the latter, however, being undesirable feature of this mode of ad istration. In one case the codeine was as a rectal suppository. In this case the tient, who, as a consequence of dysen suffered from painful stricture of the rect and, at the same time, violent bronchitis laryngitis, obtained relief from the local in the bowels, and the cough was like combated, by the use of suppositories cont ing ½ grain of the alkaloid. In order be certain as to whether these effects w actually due to the codeine, its adminis tion, as well as that of any other narco was interrupted for three or four days, w the symptoms again returned to their or nal intensity, and were again overcome the renewed use of codeine. As is the c with most remedies which act on the nerv system, it was also proved, in the case codeine, that single large doses were m more efficacious and energetic than the s amount given in divided portions. Th for example, the author found that when grain was given in the morning and the ev ing, the results were quite satisfacto while two grains might be given in a day, doses divided in equal amounts, given ev two hours, without producing any appar effect. This result was most marked in t case of a patient with advanced phthisis, whom ½ grain of codeine given in the mor ing and the evening produced marked narcot effect, with slight dizziness, while no symptom of this sort were produced by the previou administration of two grains given in divide doses in one day, nor was this latter mode administration capable of producing anythi but the slightest narcotic action. Symptom of fulness of the head, dizziness, and sli

nausea occurred in a few other instances after the administration of codeine, especially in cases of advanced phthisis; in fact, in some cases were so marked as to prohibit a sufficient increase in the dose to procure the desired narcotic effect. This lack of tolerance of codeine in prostrated individuals must, therefore, be borne in mind, and in such cases it is extremely desirable to commence with small doses. With these exceptions no symptoms of poisoning in the entire series of experiments were ever met with.

In view of the studies of Von Schroeder on animals, especial attention was directed to the pupil and to the action of codeine on the intestinal canal. Schroeder observed in dogs, after the use of small doses, which were only capable of producing slight narcosis, that the pupils were markedly contracted, while large doses were rapidly followed by the occurrence of tetanus, and that then there was wide dilatation of the pupils. The author states that in his patients, in many of whom two or three grains of codeine were given daily for weeks at a time, that the pupils, when the narcotic effect was sufficient to arrest the cough, were always about the normal degree of dilatation, while in no instance was there ever the slightest indication of anything at all approaching a tetanic condition. Schroeder further observed, in his experiments on dogs, as was also the case in rabbits, that codeine was very apt to produce diarrhœa, in which he confirmed the observation previously made by Falck. The doses, however, given in these experiments upon animals were relatively large, so that the extreme of narcotic effect was passed, and then in many cases tetanic action was produced. The author admits that in his series, in a few instances, the use of codeine was followed by liquid stools; but, from the extreme smallness of the dose employed, in comparison to that which is required in the series of experiments on animals to produce diarrhœa, as well as the small degree of narcotism produced in his cases, he feels warranted in concluding that there is no marked relationship between the administration of codeine and the production of diarrhœa. The importance of a correct determination of the action of codeine in this connection is very evident, for it is readily conceivable that a case may combine the qualifications not only for arresting the cough, but also for controlling the diarrhœa; such, for example, as would occur in intestinal tuberculosis complicated by phthisis of the lungs. Here it is evident that if codeine actually increases diarrhœa its use would be contraindicated. In the present state of our knowledge we would undoubtedly prefer in such cases the use of morphine to codeine.

On the other hand, it is quite evident that, as there is some force in the observations which point to the laxative action of codeine, where marked chronic constipation complicates a cough, such, for example, as might readily occur in bronchitis or laryngitis, it is then evident that codeine would be preferable to morphine. The author refers to still another advantage which is offered by codeine and absent in morphine in bronchial catarrh, and that is that codeine seems to facilitate expectoration, and the author states that he has observed in a large number of cases, following both acute and chronic bronchitis, that the administration of codeine seems to act as a mild expectorant not only in diminishing the violence of the cough, but liquefying and facilitating the removal of secretion. This action is less marked in simple cases of chronic laryngitis. In such cases codeine fails to produce relief much more frequently than morphine, although Rauchfuss seems to have obtained different results; since he recommends codeine as the safest and most satisfactory remedy and the one most readily controlled in relieving coughing in pseudo-croup in children. In tuberculosis of the larynx codeine will still more frequently fail, and will in but few cases replace morphine; since the power of the latter in controlling pain is far beyond that possessed by codeine, and in phthisis of the larynx pain and difficulty in swallowing are two symptoms which call for the most active treatment. On the other hand, codeine seldom affects the appetite, only in rare cases producing slight nausea, never producing vomiting; all of these facts are strongly in favor of the use of codeine in preference to morphine.

In many cases the idiosyncrasy against the use of morphine is so marked as to almost prohibit its employment. As an instance of this, the author refers to the case of a nurse who, in the early stages of phthisis, was absolutely unable to take opium or morphine in any form, as its administration, even in minute doses, produced vomiting; nor was extract of hyoscyamus or extract of cannabis indica capable of relieving the violent coughing; meconarceine was of some value, but its great expensiveness prohibited its constant use. Resort was then made to the use of codeine in pill form, ½ grain being given

four times daily, and, as a result, the cough was promptly relieved, while after a few days it was found that the dose might be reduced without losing its effectiveness. In a series of cases of advanced phthisis, codeine failed after several days employment, even although at first it appeared to possess a better action than morphine. The fact that in some cases at first codeine appears to act more energetically than morphine is perhaps to be explained by the supposition that the patients have acquired a certain tolerance to the use of morphine; but after they become accustomed to codeine it more rapidly loses in effectiveness than morphine, so that in many cases the amount of codeine which must be given to prove effective must be rapidly increased. It must not be forgotten, however, that in cases where it apparently loses its power, the effect may be due not only to the accustoming of the system to codeine, but to the advance in the morbid processes in the lungs by which the irritation may be greatly increased. In such cases the morphine will undoubtedly prove much more active than the codeine, which possesses less absolute narcotic power. Nevertheless, the author believes that codeine possesses, in such cases, the greatest value, and its main importance is to be found in its use as a substitute for morphine, not as one which can in all cases absolutely replace it; but, especially in cases which have acquired tolerance of morphine, it may be used in its place with advantage, in some cases permanently, in other cases only temporarily, but even its temporary use in such cases will be found to give relief, and when it commences to lose its power it will nearly always be found that the susceptibility to morphine has been once more regained. So that, in cases where from the very outset the use of morphine is impossible from intolerance on the part of the patient, codeine will be of the greatest value, for it never produces vomiting, nausea, and the allied line of symptoms which so frequently render the use of morphine impossible. So also codeine does not produce loss of appetite, nor does it produce constipation. It reduces violence of coughing, and it renders expectoration easier.

THE RATIONAL TREATMENT OF SCIATICA.

At the meeting of the New York Neurological Society, held April 1, 1890, Dr. G. M. Hammond read a paper on this subject (*New York Medical Journal*, April 3, 1890). The author considered all cases to be pathologically a more or less mild or severe inflammation of the nerve-sheath or interstitial tissue. He agreed with Anstie that rheumatism, gout, and syphilis were not nearly so commonly associated with sciatica as was generally believed. His own experience with the disorder has shown that the vast majority of persons with sciatica had never suffered from these diseases, and that of hundreds of persons with rheumatism, gout, and syphilis, a very infinitesimal proportion had ever had sciatica. It was very probable that rheumatism and gout lowered the tone of the system to such an extent as to render the patient more liable to an attack of sciatica than he otherwise would be. But, whatever might be the cause of the disorder, it should in all cases be treated as a neuritis. Pathologically, we had to deal with inflammation of the sheath of the nerve and perhaps of the nerve itself, and with a sero-fibrinous exudation, which was usually between the sheath and the nerve, but was sometimes in the substance of the nerve itself. Clinically, there was pain, which might be slight or agonizing, continuous or only present on motion, and, in old cases, there was a certain amount of atrophy of some of the muscles.

For the relief of pain, the remedies used should vary with the extent of the suffering. In the severest cases, where the suffering was intense, it was absolutely necessary to use morphine. When such was the case, it should be given in doses amply sufficient to relieve all pain, and should be injected hypodermically and not given by the mouth; the fluid should be injected as near the nerve as possible, as there was some reason to believe that morphine had a tendency to reduce the inflammation in a nerve when brought in contact with it. In milder cases, phenacetin, in a single dose of 15 grains, which could be repeated in an hour if necessary, would be found to fulfil all requirements. Antipyrin and acetanilide could be used in place of phenacetin if desired.

To relieve the neuritis itself, he depended almost entirely upon rest, the application of cold, and the use of electricity. In regard to the value of rest in the treatment of sciatica there could be no doubt. Every time the leg was moved the functions of the sciatic nerve were called into play. It was well known that the use of nerves and muscles induced a temporary congestion of the parts used, which would only have a tendency to

avate a condition of already existing in-mation. By rest he meant absolute rest ned by keeping the patient in bed and ing the old-fashioned long splint, reach-from the axilla to the sole of the foot. It ld be so attached as to leave the thigh sole uncovered for the use of electricity cold. Every fourth day the splint should emoved for a short time in order to ipulate the joints and muscles to a slight ee. Cold could best be applied to the ic region by ice-bags. The refrigerating s he had found less efficacious. As to tricity, it was very useful, but only the inuous current should be employed, and e following manner: The negative elec-e should be about nine by four inches in and should be strapped to the sole of the by elastic bands. The positive electrode ld be about five or six inches square, and ld be applied over the gluteal region, the point where the sciatic nerve rged from the pelvis. If there were any tender spots along the course of the e, this electrode could be changed occa-ally so as to cover them. The strength e current should not be such as to cause h pain, but should fall just short of doing No rule as to the current strength to be loyed could be laid down, as the point of ation was different in different individ-. The continuous current should be ap-d twice daily, if possible,—certainly once y,—for about five minutes at each *séance*. t of the text-books recommended that at end of each application of the continuous rent a number of interruptions should be e in order to stimulate the muscles. thing of the sort should be done. It was posed to the scientific treatment of the ease. It irritated the nerve and counter-ted, in part, if not altogether, the benefit ived from the continuous current.

Dr. Burnett had treated a case of acute atica by this method with the long split, der the direction of Dr. Hammond. The was kept in the splint for eight days, hen recovery was found to be perfect.

Dr. Dana thought that the author of the per had done good service in calling atten-ion to the fact that rheumatism, gout, and yphilis were not causative elements in sci-atica, but merely diatheses, at times coinci-dent with the disease of the nerve. Almost l cases were of an inflammatory nature; ere was a minority of cases, however, in hich there was no actual neuritis, but a re neuralgia, often reflex, and due to pel-vic irritation, and especially found in young women. He believed the treatment outlined to be rational. Rest was fundamental; but he had had quite as much success with strong counterirritation in addition to the rest as with the application of cold.

Dr. Starr mentioned the fact that acupuncture had been employed as a remedy in sciatica, a contributor to the *Practitioner* having recently called attention to the method, maintaining that fluid accumulating in the sheath of the nerve might thus be evacuated. He had himself had no experience with it.

The President differed with the author of the paper and with Dr. Dana in their statement that rheumatism, gout, and syphilis had no particular causative relation to sciatica. There was not, perhaps, so much relation between sciatica and gout and syphilis as between sciatica and rheumatism, but his experience led him to be convinced of such relation. He had also met with a number of cases of sciatica due to diabetes; and, if diabetes could do so, why could not the rheumatic poison produce a similar sciatic neuritis?

In treatment he had found the galvanic current very unsatisfactory, but the application of cold useful. He had also employed ichthyol with considerable benefit.

THE ANATOMICAL ALTERATIONS IN CHRONIC SPHACELIN-POISONING.

In his work on the general pathology of the circulation and nutrition, R. von Recklinghausen, in the chapter on "Gangrene," produced through hyaline thrombosis of the arteries and capillaries, makes the following statement: "This hyaline thrombosis of the arterial branches may be produced, as was shown by Professor Kobert, in the cock's-comb by the administration of ergot preparations. In the points of the cock's-comb, which thus become dark-blue and dried on the surface, and whose epithelial coat becomes almost entirely separated, the axial artery may be found to contain a bright red hyaline clot, containing vacuoles, which, on certain points, entirely fills the lumen of the vessels, but on others forms a hard deposit on the arterial walls, while enclosing a narrow canal. This hyaline deposit is only found in the arterial branches, never in the capillaries or veins, and points to the fact that in ergot-poisoning there occurs marked contraction of the external parts of the cock's-comb,

causing gangrene by the interruption of the blood-current there produced."

On the other hand, Kysinski, in similar experiments, was unable to find either thrombus of the vessels or a degeneration of the tissues, and the contradiction between these two observations led DR. A. GRÜNFELD to undertake, under the direction of Professor Kobert, a new series of studies on this subject in the Pharmacological Institute of Dorpat, and his results are published in the *Arbeiten des Pharmakologischen Institutes zu Dorpat*, vol. iv., 1890, his experiments being made on eight cocks poisoned with sphacelin extract and sphacelinic acid. The author was able to confirm the observation of Kobert that the most frequent appearances of chronic poisoning consisted in the gradual discoloration of the comb, the cock's-comb becoming first dark-blue and then black. Occasionally these changes disappear, but if the administration of the poison was persisted in, the comb became quite black and dry. A similar state of affairs occurred also on the tip of the tongue, which, in some cases, became so completely desiccated as to break off. Microscopic examination revealed that these changes were of a gangrenous nature, and depended upon obstruction of the circulation, and therefore the author confirms the statement of Kobert. The author found perfectly distinct hyaline degeneration in the arteries, the walls of the vessels were thickened, while the hyaline deposit occurred between the intima and adventitia, the lumen of the vessels being filled with a thrombus, which, in some cases, was closely adherent to the intima, in other cases was separated from it. The thrombus consisted in part of well-preserved blood-cells, in part of cells undergoing various degrees of hyaline degeneration.

BORAX IN EPILEPSY.

At the meeting of the Cardiff Medical Society, held April 3, 1890, DR. STEWART, assistant medical officer at the Glamorgan County Asylum, related cases illustrating the value of borax in epilepsy. 1. A girl admitted, aged 13, had had epileptic seizures dating from birth, occurring in numbers varying from two to twelve per day, and chiefly by night. She had been under treatment repeatedly, but without benefit. Without treatment the fits during the first week were twenty-six in number; under borax they were reduced to twenty-four in the second and eight in the third week. A an interval free from fits of sixteen days, occurred on two successive nights; after another interval of nine days, a fit took place, and since that there has no recurrence of fits,—that is, a clear int of over a month. 2. This patient bega suffer from nocturnal epilepsy at 18, came under treatment five years afterwa The case was complicated by serious car disease and stenosis of the mitral ori Without treatment the average monthly n ber of fits were one hundred and one, under borax this was reduced to twent the first month, seven in the second, o the third, five in the fourth, none in the and one in the sixth. 3. This patient whooping-cough at 7, followed by left h plegia, imbecility, and epilepsy. The ave number of fits a week, when no special t ment was employed, was 3.5, and bro failed to effect any reduction; after two a half years' treatment the weekly aver had risen to sixteen. Under borax the we average during the first month was red to 15.5, and during the second month to 1 The diminution took place chiefly in the turnal seizures. In 4, 5, and 7, in w the fits occurred both by day and by n bromide exercised a decided influence the diurnal seizures, leaving the nocti practically unaltered, and in these be was experienced from the combined us bromide and borax, three doses of the for during the day and one single dose of the ter at bedtime. 6. This patient, epileptic imbecile from birth, came under treatme 35. The fits were of the nocturnal type, uninfluenced by bromide, and were slig diminished by borax. Dr. Stewart concl that borax exercised a peculiar influence o nocturnal seizures, and that it was, in c where the fits were entirely of that kind, the greatest good might be expected; bromide, on the other hand, exerted a powerful influence over diurnal seizures, that, in cases characterized by both day night fits, a combination of these two re dies would be productive of most benefi *British Medical Journal*, April 19, 1890.

THE TREATMENT OF FLATULENT DYSPEPSIA.

In *Les Nouveaux Remèdes*, April 8, 1 DR. HUCHARD publishes a number of mulæ, which are claimed to be of valu the treatment of dyspepsia, especially wi

of preventing the development of flatu-. Among the remedies which the author found most satisfactory, chloroform is best. On account of its irritant action ould not be given in a state of purity or apsules, as is so frequently done. The mixture is claimed to be its administra- in saturated chloroform-water.

Saturated chloroform-water, 150 parts;
Distilled water, 120 parts;
Mint-water, 30 parts.

this mixture a tablespoonful may be taken either diately before or during a meal.

he same dose may also be taken of the wing formula :

Saturated chloroform-water, 140 parts;
Orange-flower water, 150 parts;
Tincture star anise (*Illicium anisatum*), 10 parts.

the following preparation the chloro- is associated with gastric stimulants :

Tincture of gentian,
Tincture of anise,
Tincture of nux vomica, āā ʒi;
Chloroform-water, 20 to 40 drops.

ter filtration, 10 to 20 drops of the above may be in a little water a quarter of an hour before eating.

hen it is desired to employ the so-called rbing powders the following formulæ be prescribed :

Powdered charcoal, ʒii;
Sodium bicarbonate, ʒi½;
Calcined magnesia, ʒi;
Powdered colombo, ʒss.

Make 40 powders. One powder may be taken half hour or an hour before, or, if an antiseptic action is ired, at the time of, eating :

Beta-naphthol,
Salicylate of bismuth,
Magnesia, āā gr. xlv.

Make 30 powders, which may be administered as ove.

THE DISCUSSION ON EMPYEMA AT THE NINTH CONGRESS OF INTERNAL MEDICINE.

At the Ninth Congress of Internal Medi- ine, held in Vienna, April 15 to 18, empy- ma was made the subject of papers by Im- ermann, of Basle, referee, and Shede, of Hamburg, co-referee; Ziemssen, Ewald, Leyden, Billroth, and others, participated in he discussion.

Immermann gives three principal indica- ions in the treatment of empyema,—1, to acuate the pus already formed; 2, to pre- nt the reproduction of a new purulent col- lection; 3, to re-establish, as directly and as completely as possible, the normal conditions of the respiratory apparatus.

The first of these indications generally demands a surgical operation of some kind. Spontaneous resorption, indeed, sometimes takes place, and is frequent enough in cases of metapneumonic empyema, when the only micro-organisms concerned are pneumococci; but where there are other pyogenic microbes present (streptococci staphylococci, tubercle bacilli) resorption is not to be thought of, on account of the resistant vitality of these latter. In these cases internal medications are quite insufficient. The pus must then be evacuated, but this is not all; the second indication must be, as far as possible, fulfilled, to prevent the reproduction of a purulent collection. The only operations to be thought of are consequently those that permit regular and complete evacuation of all traces of pus, and keep the pleural cavity aseptic.

The third indication is difficult of realization. In the tuberculous, the lesion is irreparable; the same may be said of pyopneumothorax with perforation, and of old cases of empyema where adhesions have formed. It may be said, as a general proposition, that empyema, whatever be the mode of treatment, will end in cicatrization and restoration *ad integrum* only by the juxtaposition of the two contiguous layers of the pleura, and this juxtaposition can be effected only by the lung being maintained in contact with the costal parietes by firm adhesions. The more recent the empyema, and the younger the patient, the greater the chances of success.

Among the various operations, thoracentesis by trocar and canula and aspiration are not to be much commended, as they cannot remove entirely from the thoracic cavity the agents of suppuration. It is only in empyema due to pneumococci that results more than palliative can be obtained from simple puncture.

Thoracentesis accompanied by irrigation with disinfectant liquids has not furnished very satisfactory results; the thorax cannot, in fact, be entirely cleared of pyogenic agents in this way. A better method is that of *perrigation*. The pleural cavity is opened by two orifices directly opposite; there is an antero-superior, and a postero-inferior puncture, and in each opening a piece of rubber tubing is left for irrigation and drainage. By this means the pleural cavity may be washed out from top to bottom every day. Two of Im-

mermann's patients (children) thus treated, got well in a fortnight. This is Michael's method.

The permanent evacuation of pus as fast as it forms constitutes thus the dominant idea of the various treatments of empyema designated under the name of *radical method*, and which all have in common as their characteristic, the production of a large orifice in some part of the thorax, and the establishment of an external fistula, which is kept open till the patient is well. Most gratifying results have attended this method; in fact, the mortality from empyema is scarcely one-fourth what it was formerly under the old treatments.

König makes an opening on the side of the thorax, just in front of or behind the axillary line, an intercostal space having been chosen. He then performs a sub-periosteal resection of a small portion of the corresponding rib. The pus is then evacuated, the pleural cavity washed out, and a drainage-tube inserted; an antiseptic dressing is then applied. Further antiseptic lavages are made only when there is stagnation of pus. Unfortunately, this latter event is very prone to take place, for the pus which is reproduced does not flow out freely by the opening made for it, and, moreover, the injections made are not always harmless; they may prevent the cavity from closing, and they may drive back the pyogenic microbes into the tissues and give rise to grave complications. To obviate these dangers, Küster, when the empyema is small and encysted, stuffs the cavity with iodoform gauze, and, when the empyema is more extensive, he recommends a double incision, the one in front, the other behind, as low as possible and quite on a level with the diaphragm; he then makes a large costal resection behind, and passes in a drainage-tube which traverses the entire thoracic cavity.

However favorable may have been the results of this method, it does not well fulfil the third indication,—that is, to restore the parts to their normal, anatomical, and physiological conditions. The pleural cavity becomes obliterated, and the patient is made miserable by the retraction and deformity of the chest.

Bülan's method of drainage by permanent aspiration is believed by Immermann to be the most rational. The physical principle of this method is the siphon. A piece of rubber tube filled with an antiseptic liquid is introduced well into the pleural cavity through a canula. The outer end is immersed in a basin of water. The siphon thus fo aspirates the pus that has collected i thorax, and what forms subsequently; over, the expansion of the lung is favor the negative pressure due to aspiration. mermann regarded the results obtained this method as very encouraging. Th tient, if the empyema be recent, gets without deformity or solution of conti with almost normal freedom of action o lung. The method, however, succeeds when the lung is expansible and yield aspiration.

The indication for this method is fou cases of recent empyema with pus not thick, formed by streptococci and staph cocci; notably in bilateral empyema, w it will not do to make a double thoraci tula. In metapneumonic pleurisies, wher pus is generally thick, and where there often adhesions, evacuation by this pr is sometimes quite difficult. Putrid e ema demands the radical method, for permits a more rapid clearance of pus, thus saves the patient from poisoning d the absorption of putrid matters.

Schede, of Hamburg, co-referee, was favorable to repeated punctures by troc aspirating-needle. He had had brilliant cess in one case of purulent pleurisy co cated with pulmonary gangrene by Bülan's method of siphon drainage. T are, however, serious difficulties atten the carrying out of this method, especially children.

The treatment by incision and resectio actually the only treatment which, in judgment, is always useful and never de mental. The incision should be behind axillary line, and the resection should incl a small portion of the eighth, ninth, or t rib, according to circumstances. In se cases of pyopneumo-thorax he had practi resection of the thoracic parietes, inclu all the ribs from the second downward, their cartilaginous insertion to the co tubercle. The pus cavity was thus tr formed into a vast wound, covered, in p by the skin and the subscapularis mus the rest of the wound was covered with i form gauze, and was ultimately filled in granulations. His success in seven out eight cases thus treated was most gratifyi the eighth patient died from iodoform-p soning.

In the discussion which followed, Fra stated that in most cases he preferred t was called the radical operation; the ol

ss is, however, preferable to simple in- and to puncture.

rschmann had been satisfied with the od of Bülan; had had sixty-three excel- results out of seventy-five cases. If the age-tube gets stopped up with clots or of fibrine, it should be replaced by an- tube of larger calibre. He had tried er's method, which creates two fistulæ d of one, and had found it inferior to of Bülan.

yden had found great difficulties in the of carrying out Bülan's method. It is difficult to keep the drainage-tube in , especially as the pleural cavity con- . The most difficult empyemata to are those that result from rupture of a culous cavity; the easiest are those that or accompany pneumonia (metapneu- e). Drainage by siphonage, when it can rried out, is adapted to all the varieties pyema, even the putrid.

ald believed thoroughly in the radical ods. The physician should make an diagnosis by means of a hypodermic ge, and when he finds pus, he should at make a free large opening and establish age. Von Ziemssen for more than ten had treated all cases of empyema by on and resection, but Mosler, on the hand, stated that he had uniformly results by free incision without costal tion.—*Boston Medical and Surgical Jour-* May 15, 1890.

CUTE DIFFUSE SUPPURATIVE PERI- TONITIS—LAPAROTOMY— RECOVERY.

t the meeting of the Clinical Society of don, held April 11, 1890, MR. HAWKINS- LER (Kirkburton) and MR. LAWFORD AGGS (Leeds) contributed notes of this (*British Medical Journal*, April 19, 1890). oy, aged 9, had symptoms of intestinal truction upon which peritonitis super- d. On the second day after the onset urgent symptoms laparotomy was per- ed, and the abdomen explored. The stines on the surface were glued together yellow lymph. The obstruction was nd to be due to a kink in the small intes- e, which was adherent at the bottom of uglas's pouch. As the adhesions were ng separated with the finger, an abscess ity was opened, and a quantity of very d pus escaped. A glass drainage-tube then passed into the right lumbar hollow, and several ounces of pus (not fetid) were ejected with such force as to shoot almost clear of the operating-table. There was no collection in the left lumbar hollow, but a thin layer of pus was present in the folds of the mesentery. A drainage-tube was placed in Douglas's pouch, and the wound closed, the operation being concluded as rapidly as possible. After an anxious twenty-four hours the boy began to rally, the bowels were freely opened, the distention disappeared, and the general progression was all that could be desired; but at the end of a fortnight he grew worse, and a large flat, doughy tumor developed in the neighborhood of the umbilicus, with pyrexia, tympanites, scanty urine, and rapidly-increasing pulse. These symptoms gradually disappeared simultaneously with the discharge of a considerable quantity of sour-smelling pus from the drainage-tube, and from this time progress was uninterrupted. The sinus was quite healed in about five weeks, and the boy was shown at the Leeds and West Riding Medico-Chirurgical Society on March 7, 1890, ten months after the operation, looking the picture of robust health, and with nothing beyond the scar to show that he had had any abdominal trouble. The bowels were acting regularly and well. Attention was drawn to the fact that the abdomen had not been washed out. The operation was performed under exceptional difficulties in the country, and with only dirty tank rain-water available, and without apparatus that could be adapted for washing out. Though this omission might be criticised as bad surgery, yet the result went to prove that washing out was not so absolutely essential as had been imagined. This was just one of those cases in which careful cleansing of the peritoneum had hitherto been regarded as necessary to insure success. The authors believed that had thorough irrigation been attempted the boy would have died; the extra manipulation of the intestines, which were so distended as to make the introduction of a finger a matter of difficulty, would have so added to the shock that the scale would have been turned against the patient.

The PRESIDENT remarked on the advance in abdominal surgery that seemed to be here portended. Formerly, the use of an antiseptic irrigation was considered to be indispensable; lately, mere washing out with boiled water had been held to be sufficient, and now, according to the authors, no washing out at all was required. This might mean a further advance in surgery.

MR. BARKER mentioned the case of a boy whose local condition was probably much the same as in the case just mentioned, but whose general condition was much worse. At the operation, the intestines were found glued down by inflammation surrounding caseating glands. He died of the obstruction and of the operation, which had not relieved the obstruction. In his case there was a fetid abscess, which discharged a quantity of fetid pus when the adhesions were separated. He thought that irrigation of the abdomen should be used in a limited way. In some cases it was not desirable to irrigate, in other cases irrigation was of the greatest value. Under irrigation he had not found the power of the patient depressed; on the contrary, irrigation with hot water had improved the pulse. Where there was a limited peritonitis, he would only wash out the part in which the inflammatory products lay, and not the rest of the abdomen, otherwise the germs of the local disease might be carried all over the peritoneal cavity.

MR. PARKER would like to know the class of cases in which irrigation was likely to do good or harm respectively. In a former discussion the general verdict seemed to be that irrigation was of great value. He had generally found that where warm water was used it revived the pulse; and the same result occurred when the chests of sickly children suffering from empyema were flushed with warm water.

MR. HOWSE said that his experience was entirely in favor of irrigation, and that, although great improvement in a case was likely to follow from the relief of tension and letting out of pus, irrigation also had its share in the success that usually followed the operation. He thought it better to irrigate with a fluid that had been rendered aseptic,—water that had been recently boiled, for example. He had in the accident ward at Guy's Hospital a man who had been struck on the left side of the abdomen, and was in a great state of collapse. After forty-eight hours the patient's pulse rose very high, and he seemed likely to die if left alone. The abdomen was opened in the expectation that a rupture of the intestine might be found. There was no rupture, but a collection of clotted blood. Irrigation with water at a temperature of 100° was done, and a large quantity of blood was washed out, and kept running as if a large vein were freely pouring out blood. Eventually the fluid that came away was less colored. In spite of the hemorrhage, the pulse improved under the irrigation; the patient's temperature fell, and he was soon well again. The injury in that case was probably a bruising of a large vascular surface.

MR. BATTLE said there were many cases of peritonitis in which it was impossible to say what was the cause of it. One case at St. Thomas's Hospital especially occurred to him, in which he had operated for peritonitis. Three days afterwards the patient's temperature rose, and vomiting ensued; he then performed laparotomy, and found purulent peritonitis without a discoverable cause. The child died next day, and was found, after death, to have swollen mesenteric glands. The child's mother was at the same time suffering from pyæmia in the same hospital; so that the child's case was possibly one of pyæmic peritonitis. In some cases the depression of the pulse following irrigation was such as to show that a great shock had been produced. He mentioned two cases of ruptured spleen as instances; while in a case of extravasation of blood from the pedicle of an ovarian tumor, when the wound was opened, without the use of an anæsthetic, as the blood was washed away, the pulse became quicker and its force diminished.

MR. HAWKINS-AMBLER, in reply, stated that he did not think it desirable to do away with irrigation altogether, though he considered that there were cases in which it might be inadvisable to employ it. He generally used it, because it rather enabled one to do without a drainage-tube, or to keep it in for a short time only.

MR. KNAGGS, in reply, mentioned a case of peritoneal effusion which he had washed out, and had reported in another paper, in which he had advocated irrigation. Possibly his views with regard to the necessity for irrigation and the use of antiseptics had somewhat changed. He now attributed importance to the character of the effusion, whether it was serous or purulent. It must be remembered that in the effusion there was a tendency to the accumulation of micro-organisms, which would grow there, and become more and more virulent. If one removed this reservoir of fluid, one placed the patient in the best way to regain health, and the body might then fight successfully against the organisms that must be left behind.

THE TREATMENT OF BRIGHT'S DISEASE.

At the recent Medical Congress held in Vienna a discussion as to the treatment of Bright's disease was opened by PROFESSOR

ATOR, of Berlin, who, under the name of onic nephritis, stated that he had refer- e to all diffuse inflammatory alteration of renal apparatus which was to be recog- ed by the presence of albumen in the ne, and lasting in general from one to en months (*La Médecine Moderne*, May 1, o).

This division, the most comprehensive pos- le, proves that the forms of Bright's dis- e are almost infinite; for in this diffuse lammation of the kidneys certain lesions y predominate, and this imparts to the phritis certain special clinical symptoms. wertheless, there are two principal forms ich should be recognized,—chronic paren- ymatous nephritis, or the large white kid- y, where the lesions are localized in the thelium of the urinary tubes; second, in- stitial nephritis or the small granular kid- y, which is slower in its development than parenchymatous nephritis, and is charac- ized by the production of connective tissue d consecutive cicatricial contraction of the dney. The progress of this form of ne- ritis is especially insidious, but these two rms of nephritis have determining causes, d the hope naturally suggests itself that in e treatment of these causes one may cure even prevent the evolution of chronic ight's disease. Professor Senator, how- er, believes that this can be rarely possible, d, even where cases of acute nephritis are parently cured, it should be remembered at in the great majority of cases chronic phritis will result, so that even when ne- ritic cases have been apparently cured, eir urine should be constantly examined, d measures be taken to prevent the dan- r of chronic nephritis. Passing in review e presumed causes of chronic nephritis, it found that cold or chilling of the body, es- cially when slow and prolonged and when companied by dampness, are the most fre- ent causes. Then come the constitutional seases, such as syphilis, malaria, alcohol- m, tobacconism, lead-poisoning, and di- betes; so also pregnancy and other forms f renal congestion may likewise lead to the oduction of chronic Bright's disease. In all f these cases it must be acknowledged that e are absolutely powerless, and, while their ode of action is too indeterminate to give us points in prophylaxis, they very rarely as- ist us in therapeutic indications. Thus, for example, in the case of syphilis, Professor nator states that he never dares to treat a se of syphilitic nephritis by mercurial prep- arations, since they have the certain effect of exaggerating the renal symptoms and of aggravating the condition of the patient instead of improving it. As a consequence, the treatment of chronic Bright's disease is confined to the treatment of symptoms, and from this point of view chronic nephritis closely resembles the acute form of renal inflammation. Here, also, as in the latter, antiphlogistics are of no value, and the kidney itself is too deeply situated to give any hope of acting directly upon it, while as regards the reflex action on the kidney it is too feeble to exercise any favorable influence on renal lesions. As a consequence, Professor Senator cautions against the employment of cutaneous irritants as always dangerous. Then, again, we have but little in the way of medicine which acts directly on the diseased kidney. It has been said that astringents cure or give rapid diminution of albuminuria. Semmola has accepted this view, since, according to him, nephritis is due to the presence of large quantities of albumen in the blood; but he is the only one who adopts this view, and we are compelled to acknowledge that there are no remedies which cure Bright's disease. Even ichthyol, which acts so well in chronic inflammations of the skin, has no action on the inflamed kidney. But this therapeutic impotence by no means signifies that chronic Bright's disease is an affection which should be allowed to go on to its inevitable fatal termination. Nephritis may be arrested often during its progress, but this is by no means a cure,—that is, the parts once affected with Bright's disease never become normal. There is in this respect a certain analogy to round ulcer of the stomach. The portion of the mucous membrane, which was the seat of the ulcer, is lost from a functional point of view, but the rest of the mucous membrane may substitute, by a sort of physiological compensation, the part which has been disorganized.

There is thus, as has been stated by Lecorché and Talamon, functional rather than an anatomical cure. In his own experience, Senator claims that he has cured two cases of chronic Bright's disease after two years of treatment, while Johnson has cured two cases after a duration of three years.

The principle which should govern the treatment is that of saving the organ as much as possible, as by restricting its activity one aids greatly in the restoration of its physiological functions.

The renal epithelium is in part disorganized, and consequently the kidney should

only be allowed to remove the amount of waste substances which may be eliminated by that portion of the renal tissue remaining unaffected. But the obliteration of the uriniferous tubules by inflammation, swelling, and desquamation determines congestion in the glomeruli of the kidney. There is thus local œdema produced, and infiltrations, which, in time, produce vascular and perivascular sclerosis; this complication is, however, not as dangerous as has been generally supposed, for if the epithelium cannot be replaced for the elimination of toxic substances, the glomeruli, nevertheless, may have their function assumed by the skin, since the function of the glomeruli is to remove water, and this is likewise possible through the skin and certain mucous membranes. Even if one could extirpate all the renal glomeruli, the skin, and the bronchial and intestinal mucous membranes would suffice largely to replace them. The prevention of accumulation in the economy of toxic substances, difficult to eliminate, is therefore the first part in the treatment of chronic parenchymatous nephritis, and this is reached by suitable regulations of diet. Little albumen should be given, and larger quantities of fat and carbohydrates. Thus, in the adult, the diet should be confined to 1265 grains albumen, 480 grains fats, and 7500 grains carbohydrates, or one-half the quantity of albumen may be given, provided the fats be doubled or trebled. Albumen cannot, however, be entirely left out of the diet, otherwise the digestion of carbohydrates and fats will be seriously interfered with. Of the fats which are especially readily digestible, the author gives the preference to cod-liver oil and cream. As regards albumen, the milk contains enough for the needs of the patient, and Senator confirms the general statement that milk diet is an excellent *régime* in the case of Bright's disease; but, although two to three quarts may be given a day to a patient, he does not advise the restriction of the patient to an exclusive milk diet, for the patient in time will become absolutely incapable of taking it. It is well to mix with the milk a little brandy or other substance, which may be left to the choice of the patient. Koumiss or képhir are likewise of value, particularly on account of the alcohol and lactic acid which they contain. Amylaceous substances, especially the milk of almonds, give excellent results, while meats which are poor in ptomaïnes, such as the white meats, fish, etc., are especially to be recommended.

Eggs may be given, since Oertel a Schreiber have determined that the inges of eggs does not produce albuminuria, and d not increase the albuminuria already pres Nevertheless, eggs in too large quantity dangerous. Large quantities of liquid ar be recommended in chronic Bright's dise but beer, on account of its richness in ext tive matters, is absolutely contraindica Muscular activity, leading to the product of extractive matters, which tend to accu lation in the organism, is very dangerous, the exercise of the patient should be limi as much as possible. As regards diureti digitalis, strophanthus, and caffeine sho be carefully watched, but may occasion prove of service. As chronic nephritis most often associated with general arte sclerosis, iodide of potassium may prove value, but the attention then should be rected towards the heart. Smoking sho likewise be forbidden, for tobacco in th cases exercises a deleterious action on cardiac blood-vessels.

In opening the discussion, PROFESS ZIEMSSEN especially emphasized the imp tance of the distinction drawn by Profes Senator between the parenchymatous a the interstitial forms of nephritis as ind pensable from the point of treatment.

Parenchymatous nephritis especially d mands diuretic treatment, but the abuse remedies in this form of nephritis is es cially dangerous. No drugs should be us unless clearly indicated. Acetate of le tannin, and fuschin have been tested in t treatment of albuminuria and their ineffic positively demonstrated. It appears that iodide of potassium has given somewhat m favorable results, but the true treatment albuminuria is still the milk diet joined to most rigorous attention to hygiene. The tivity of the circulation must be maintai at all price, and this may be best acco plished by baths of hot water or vapor bat taking especial care to prevent all possi chilling of the patient. Thus warm ba taken at home, and lasting fifteen or twe minutes, should be followed by wrapping t patient in dry sheets, with careful avoiding any exposure to draughts. When the bloo pressure is notably reduced digitalis may employed with care. Theobromine is also value in small doses, and it may be pr scribed for a long time without any inco venience.

This, in Ziemssen's opinion, is the best uretic of all, since it does not irritate

apparatus. Calomel, on the other is powerless to cure the œdema of t's disease. Cream of tartar is, in the r's opinion, the best cathartic in this ction. Capillary drainage of œdema- issues will also prove of great service, gh Ziemssen recommends that the ary tubes should never remain more twelve hours in position, and they l be carefully covered with antiseptic late dressing.

onic interstitial nephritis offers a double tion. The one concerns the general as to the cause, whether syphilis or -sclerosis; the other deals with the ications in the organs of circulation. gards the first indication, it is necessary d the patients into warmer climates, to ibe a regular mode of life, and to sub- em for a long time to the action of the of potassium. If there is excessive pressure, the patients should be posi- confined to bed, revulsives may be ap- to the præcordial region, and even ng may be resorted to, above all, if are uræmic accidents.

continuing the discussion, DR. MOSLER se confirmed the statements of his prede- that the treatment of Bright's disease especially the treatment of symptoms. owever, appears to believe that the tic treatment of acute nephritis might to prevent chronic Bright's disease. kewise places especial reliance on the liet, which at the same time nourishes ashes out the kidneys. He, however, es that calomel would largely prevent ic accidents.

WINTERNITZ also laid great stress on lue of the milk diet, and advised its in- ation in extremely small doses, a tea- ful at a time, and then gradually pro- ng, while the addition of fat seemed r of advantage. He had, likewise, some service from anointing the body fats, such as lanolin, and he also rec- nded the prevention of muscular exer- y the patients; and as it is well known hysiological albuminuria is more marked than after sleeping, the patients l be kept as quiet as possible, and di- produced by vapor-baths and massage. OFESSOR EWALD especially recommended se of milk which had been peptonized, ich an additional amount of cream had added. He also said that in chronic titial nephritis he had obtained satis- y results in administering iodide of potassium in as large amounts as 150 grains a day. Diuresis he produces by the mixture of calomel and digitalis powder, while diaphoresis was to be accomplished by the use of warm vapor-baths while the patient was in bed and the administration, although with the greatest caution, of jaborandi and pilocarpine.

KLEMPERER likewise laid stress upon the importance of the milk diet, and he administers about two quarts of milk a day to the patient, 750 grains of butter, 7500 grains of bread.

PRIBRAM had found that fuschin was absolutely inefficacious in the treatment of Bright's disease, although tannin had appeared to render service in combating the acute attacks in the course of chronic nephritis. Mineral waters, by increasing arterial tension, can prove very dangerous in the treatment of interstitial sclerosis, and may even cause hemorrhagic complications.

THE EMPYREUMATIC OIL OF COFFEE OR CAFFEONE.

When coffee is roasted, an empyreumatic oil is developed, which is supposed to impart to it new physiological properties. The actions of this substance have been studied chiefly by means of a distillate obtained from a strong infusion of coffee; by a comparison of the effects produced by the use of preparations of raw and roasted coffee, or by the administration of the pure oil.

In experiments on three individuals, Lehman found that the distillate from roasted coffee caused nervousness and slight sweating, and acted on the brain, affecting the mental faculties rather than the imagination. The solid constituents of the urine, such as urea, were diminished to a greater extent than by caffeine. After large doses there occurred congestion, profuse sweating, and sleeplessness. In two instances diarrhœa was noted. Nasse, in experiments on animals, states that when he injected a few drops of a strong infusion of freshly-roasted coffee into the jugular vein of a rabbit, peristaltic movements of a decided character occurred in the intestines, which he was unable to produce with caffeine. Méplain obtained from a litre of strong infusion of coffee two hundred grammes of a liquid which possessed the aromatic odor of roasted coffee and a slight bitter taste. After the ingestion of this, the pulse was increased from 64 to 74 per minute, arterial tension was diminished, and the face con-

gested. Marvaud obtained similar results. Rabuteau states that he has "recognized in caffeone the exciting properties attributed to coffee. Everybody knows that an infusion of coffee hinders sleep, but that this effect is not invariably present. We have wrongly attributed this difference in action to idiosyncrasy, but it is due to a difference in the composition of the coffee, for while an infusion of coffee containing caffeone prevents sleep, the same effect is not produced by the ingestion of an infusion which has been freed from caffeone by prolonged boiling, or by that which has been prepared from coffee too much roasted, or from green coffee, or which contains a small quantity of the particular substance which gives coffee its peculiar odor." He also found that caffeone possesses decided toxic properties, and prevents the development of low organisms in organic fluids. Binz, in experiments on three dogs with a distillate, obtained results in some respects opposed to those already recorded. The distillate, he states, was of a light golden color, of a very aromatic odor and taste, and cloudy when cold. In one experiment a dog, weighing 720 grammes, was given by the stomach 25 c.c., representing the one-half of the distillate from 22 grammes of coffee, in 150 c.c. of hot water. No phenomena were observed, except a quickening of the heart-beats from 110 to 145 per minute. In another experiment with a dog, weighing 1790 grammes, and drunk with alcohol, 12 c.c. of a distillate from 16 grammes of coffee in 1 litre of water were injected subcutaneously in two places. In six minutes the respiration-rate was doubled in depth and frequency. In the last experiment the dog weighed 1840 grammes, and was completely narcotized with alcohol. Before giving the caffeone the arterial pressure was 76 mm. of mercury and the pulse 39 in fifteen seconds. 20 c.c. of a distillate of 85 c.c., which was obtained from 20 grammes of roasted coffee in 100 c.c. of water, were injected subcutaneously, and 50 c.c. given by the stomach. In ten minutes the pressure fell to 68 mm., in fifteen minutes to 66 mm., and in forty minutes to 56 mm. The force of the pulse was doubly strong, and the heart-beats increased in frequency. The diminution of blood-pressure he consequently attributes to vascular dilatation.

It is obvious that in the investigations above referred to, the actual quantities ingested of the so-called caffeone were not known, and an effort was made by Drs. Hare and Marshall to isolate this substance and study the effect of definite doses. Th attempts, however, met with failure. Th investigations have recently been exten by DR. EDWARD T. REICHERT, who p lished experiments in the *Medical News* May 3, 1890, which show that the results tained in Drs. Hare and Marshall's exp ments were mechanically produced thro the presence of an insoluble oil in the blo since Dr. Reichert has found that olive produced precisely similar results, while f ther he found that the subcutaneous adm istration of the oil of coffee, as used by D Hare and Marshall, was absolutely inert.

The positive results recorded by vari observers following the ingestion of a di late from roasted coffee, the evident dif ences in the activities of infusions prepa from raw and roasted coffee, the change the properties of the infusion of roasted c fee, which occurs from continued boiling, in the seeds by excessive roasting, certai lead to an inevitable conclusion that so volatile principle is developed during t roasting, which is dissipated by prolon heating and which possesses definite phy logical properties. It would, therefore, n urally be inferred that such a substa would pass over in the early distillate fro strong infusion of coffee. Dr. Reichert co sequently prepared a distillate by placing 5 grammes of freshly-roasted coffee in a Fl ence flask, adding sufficient water to cover and collecting the first 200 c.c. distilled. Th was of a pale-yellow color, slightly turbid, b ter, and had the strong aromatic odor roasted coffee. A small dog, weighing kilos, whose carotid was connected with t kymographion, was given, by means of t external jugular vein, within ten minutes, 1 c.c. of this distillate in doses of 10 c.c., b without any definite effect on arterial pre ure, pulse, respiration, bodily temperature, otherwise. A similar distillate was prepa from other samples of coffee, but all w inert, although appropriate tests demonstrat the presence of organic matter. The opp site results obtained by different observ and Dr. Reichert led to the belief that th hypothetic principle is more volatile in so samples of coffee than in others, but whatev its nature, it is clearly not identical with t empyreumatic oil in coffee.

GURJUN OIL AS AN EXPECTORANT.

In the *Lancet* for May 3, 1890, DR. W LIAM MURRELL writes that he has rece

m using copaiba as a remedy for chronic nchitis and winter cough, and found that, ough it was an expectorant of great ex- ence, it had the grave disadvantage of ging out a rash, attended with intense hing, and often accompanied by irritation the throat, diarrhœa, and vomiting. To iate this difficulty, the author endeavored find some drug allied to copaiba which uld exert the required action on the bron- l mucous membrane without affecting the n. In this connection gurjun oil occurred Dr. Murrell, which at one time was exten- ely used to adulterate copaiba. Gurjun am or wood oil, as is well known, is a bal- ic exudation obtained, by incision and the plication of heat, from the trunk of *Dipteroc- pus turbinatus* and other species growing in East Indies. It is a transparent liquid, of consistence of olive oil, of an opaque, gy, greenish-gray color, as seen by re- ted light, and having an aromatic odor d taste not unlike that of copaiba, but hout its acridity. Some years ago it was ught prominently into notice by Dr. gall, of the Andamans, as a remedy for rosy, but seems to have attracted but little ntion in this country.

Dr. Murrell gave it in doses of 1 drachm d then 2 drachms three times a day. He scribed it in the form of a mixture, with nor potassæ, spirit of nitrous ether, muci- e of acacia, and cinnamon-water. It is not inviting mixture, as it has a tendency to urdle." After a time Dr. Murrell mixed it th extract of malt, 2 drachms of the balsam an ounce of the extract, three times a day, d this was taken without difficulty. In sev- l cases he gave in addition tincture of borandi or nitrate of pilocarpine at bed- me, so as to produce profuse sweating, but eruption resulted. It has been recom- ended as a remedy for gonorrhœa and et, but the author states he has had no perience in this direction.

INTESTINAL ANTISEPSIS.

At the recent meeting of the Ninth Medi- l Congress in Vienna, PROFESSOR CANTANI ad a paper on this subject (*La Médecine oderne*, May 1, 1890), in which the credit for having first attempted intestinal antisep- is was given to Bouchard, who treated his typhoid fever patients with a mixture of char- oal and iodoform, naphthol in large doses, even salicylate of sodium. The efficacy this treatment is, however, still doubtful, and substances administered in the form of a solid can only with difficulty penetrate the intestinal mucous membrane, which is the seat of the pathogenic microbes. Cantani, therefore, suggests washing out the intes- tine by means of enemata, so as to act di- rectly on the intestinal membrane, and so accomplish intestinal antisepsis much more reliably than by the administration of reme- dies by the mouth.

The great difficulty, however, is to pass the ileo-cæcal valve, but this is, however, by no means entirely impossible, since he injected into the rectum of a patient a large quantity of olive oil, and found one hour afterwards the patient had vomited the oil. The oil had, therefore, passed the ileo- cæcal valve and also the pyloric sphincter. It therefore becomes possible to wash out the small intestine by the injection of ene- mata made antiseptic by the addition of carbolic acid, tannic acid, or sublimate. The two former are the more reliable, since the sublimate tends to combine with the al- buminous substances found in the intes- tine, and thus form an absolutely insoluble precipitate of albuminate of mercury. Pure oil itself is an excellent antiseptic. Tannic acid is the best. It may be administered in very large doses, and is endowed with con- siderable power as a microbicide. In one per cent. solution tannin kills the microbe of cholera in pure cultures. The author does not claim that these enemata kill all microbes, but they suffice to largely prevent the growth of the microbes and make the intestinal medium unfavorable to their devel- opment.

Thus, in the commencement of typhoid fever, if the bacilli are still on the surface of the mucous membrane, this use of the anti- septic injection appears of undeniable value, but later, when the bacilli have penetrated Peyer's patches, this action is no longer possible, but even then the injections dimin- ish or neutralize the virulence of the pto- maïnes formed in the intestine.

SOME DANGERS CONNECTED WITH THE CIRCULATORY ORGANS IN DIPHTHERIA.

At the meeting of Harveian Society of London, on April 17, 1890, DR. SIDNEY PHILLIPS read a paper on "Some Dangers connected with the Circulatory Organs in Diphtheria" (*Medical Press and Circular*, May 7, 1890). Many of the conditions were as

serious and as frequent causes of death as the affections of the respiratory apparatus itself, though their symptoms were often less obtrusive. The paper was based on the records of one hundred cases of diphtheria which had come under the writer's observation. Intracardiac thrombosis was an occasional cause of death in diphtheria, especially on the right side of the heart. Cases were read showing how suddenly death might result from a clot forming within the right ventricle, although the clot formation took a certain time, yet no objective symptoms of its formation might occur, the left ventricle acting, as has been demonstrated, with sufficient power to drive the blood through the systemic and pulmonary vessels without any action of the right side of the heart. The circulation was consequently kept up till the clot was large enough to prevent any blood flowing through the right ventricle, when death suddenly occurred. Extreme slowness of the pulse was noticed in three per cent. of the cases of diphtheria; all these cases were accompanied by vomiting, and ended fatally; no treatment appeared of any avail, except possibly strychnine. The prognosis of cases in which the pulse became greatly slowed was very serious. The same was the case with regard to patients in whom the pulse for some days often continued extremely rapid; these cases were much more frequent than the slowed pulse, but where a pulse-rate exceeded 200 per minute for two or more days in every case death occurred, and in nearly all from syncope. The extreme rapidity of pulse was apt to be present in the first week of the disease, and at a later period when other signs were favorable,—in many cases it was associated with repeated vomiting, in others with great drowsiness, but in some cases with no symptoms whatever. Irregularity of the pulse was not uncommon, nor was it of unfavorable prognosis. Syncope in diphtheria occurred in twenty-six of the one hundred cases, but these were mostly severe cases, as slighter ones were not admitted to hospital. In many cases it was preceded by extreme rapidity or slowing of the pulse, or by approximation of the first and second sounds of the heart, but in some cases it occurred without any warning of this nature. It occurred very early in the disease, or at any later period, frequently after the third day, and when patients appeared to be progressing favorably, or had been discharged from hospital as cured. The notes of cases illustrating this were read. Syncope attending either rapid or slow cardiac act was only attributable in most cases to turbed innervation, with or without o paralyses. Treatment of these cases du nerve disturbance by cardiac tonics wa little avail, but stimulants and feedi through a tube if necessary, was insist upon. Dilatation of both sides of the he was common in diphtheria, being brou about by softening of the muscle-fibre; the right side, in addition, collapse and co gestion of the lung especially led to it, a if the heart had become dilated bef tracheotomy was performed, it often fai to regain its power after the operati Early tracheotomy was, therefore, desira where collapse of the lung at all threaten On the left side of the heart the soften muscle-fibre tended to yield, and this w probably assisted by the increased tensi associated with albuminuria, or defecti renal rheumatism without albuminuria. He orrhage from the mucous surfaces were uncommon in diphtheria,—in three cases the one hundred, fatal epistaxis occurred; four there was bleeding from the thyr body after tracheotomy; in one case hæmop sis associated with purpura. Endocardi probably was not ever a result of diphther though it might occasionally result from di tation or anæmia.

THE EMPLOYMENT OF RETINOL AN COLOPHANE IN THE TREATMENT OF VAGINITIS.

Retinol is a liquid hydrocarbon, occurrin in commerce under the name of rosinol, an obtained by the dry distillation of colophan with other hydrocarbons,—retinaphtha, ret nyl, and metanaphthalin. Retinol is of brown or yellowish color, has the consistenc of a fat, and has a slightly bitter taste; i reaction is slightly acid, on account of th presence of traces of pinic acid. Retinol ha been employed in the treatment of gonor rhœa in the form of capsules and in the form of an application in metritis. Spread ove the surface of the body, it forms an adheren varnish-like coating. It shares in the anti septic properties of the other balsams, an possesses the additional advantage of di solving a great number of active substance such as oil of cade, camphor, naphthol, bal sam of Peru, etc.

Introduced in the pure state into the va gina, it covers the surface with an antisep layer. In *La Médecine Moderne* for April

so, Drs. Balzer and Chevalet state that several months they have been treating es of vaginitis of different degrees of in-sity with tampons soaked in retinol. ese tampons they claim are perfectly well ne, produce no pain, no irritation what-r, and that they have proved extremely cessful in the cure of vaginitis, especially ere this disease is accompanied by vegeta-ns. They have endeavored to obtain reti-l in the form of a solid mass, and, after merous attempts, which they admit are not t thoroughly satisfactory, they have finally ted it by mixing it to saturation with colo-ne, the retinol then giving a mass which dily liquefies in the vagina, but possesses disadvantage of solidifying in the vulva, d so proving inconvenient. By, however, ding a certain quantity of powdered oak-ves to this mixture of retinol and colo-ne, a mass is obtained which may be dily manipulated, and is free from the advantages above alluded to, especially en only employed every three or four ys. When, however, application is to be de daily, they have found that the mixture retinol and colophane with borate of so-m gives still better results, although the er salt produces some smarting of the va when there are any erosions. The thors, finally, recommend retinol not only the treatment of vaginitis but in skin-fections, where its adhesive and antiseptic roperties without irritation renders it an ad-irable excipient of a large number of sub-tances.

THE RAPID HEART.

At the meeting of the Medical Society at London, held May 5, 1890, the annual ora-tion was delivered by Dr. A. E. Sansom, who took for his subject "The Rapid Heart" (*British Medical Journal*, May 10, 1890). The orator justified his choice of a subject on the ground that there were very few medi-cal men who were not occasionally perplexed concerning cases involving disturbances of the normal action of the heart in relation to diagnosis, prognosis, and treatment. He in-sisted on the equal undesirability of over-rating as of understating the consequences of such perturbations. His remarks were confined to cases in which the heart's action was morbidly accelerated, leaving on one side those cases in which irregularity of ac-tion coincided with acceleration. He ex-cluded, also, cases in which valvular or other organic disease of the heart was present, and cases in which the rapidity was due to fever or analogous general condition, or to periph-eral irritation, or in which the acceleration was "paroxysmal." Moreover, cases of pal-pitation were likewise excluded when existing in a heart which under ordinary circumstances had a normal beat. By "rapid heart" he in-tended to comprise the cases in which the cardiac action was set, so to speak, for an ab-normally rapid rate. The orator then defined the normal beat as one not exceeding 90 per minute in the adult. He pointed out that in infants and young people not only is the heart-rate normally more rapid, but it is also extremely susceptible to accelerating influ-ences which may, under certain circum-stances, become more or less persistent. He then gave a list of the affections in which this abnormal rapidity of the heart's action is found: 1, in Graves's disease, in which the chief cause of danger is the cardiac involve-ment; 2, the irritable heart of soldiers, no-ticed and described by Dr. Da Costa, of Philadelphia, one feature of which was that, although the pulse-rate is persistently quick-ened, the breathing remains normal, or nearly so, often resulting in cardiac hyper-trophy or dilation,—this form of rapid heart is peculiarly common in times of great politi-cal and social excitement; 3, the rapid heart of osteoarthritis, specially commented upon by Dr. Spender, of Bath; 4, the rapid heart without notable morbid association, recorded by Bristowe, Broadbent, and Samuel West. He called attention, in relation to these cases, to the fact that the rapidity often existed for long periods of time without palpitation. Moreover, the cases which he had in his mind were not "paroxysmal," in the sense that the hurry was persistent, and the condi-tion was often associated with a curious ab-sence of distress, or even of discomfort, on the part of the patient. In spite of this lat-ter feature, the orator insisted upon the fact that this condition of rapid heart was serious and dangerous. Of seven such cases re-corded by Dr. Bristowe, five proved fatal, with symptoms which seemed to show that the affection was in causal relation with the fatal result. In reference to the fact that this condition was found in persons giving no other indication of cardiac disease, he asked whether in such cases it was to be regarded as an affection of the myocardium, or of some portion or portions of the nervous system. He quoted seventy-five cases from his note-books, in which no evidence was found of or-ganic disease of the heart or of any other

structural disease in obvious association therewith. They were, moreover, all cases in which the rapid heart-beat had existed for comparatively long periods of time. He grouped these cases under two heads: First, those in which there was no association whatever with the recognized cardinal signs of cardio-vasomotor disease, forty-six in number, comprising thirty females and sixteen males; secondly, cases in which this association existed, twenty-nine in number, twenty-four females and five males. He read detailed notes of a case belonging to the first category, in a lady, aged 52, with fatal termination, and another in a man, aged 61, in whom the condition appeared to date from physical effort, also ultimately followed by a suddenly fatal termination. He gave a synopsis of the chief points in relation to this group of cases, the maximum pulse-rate being from 110 to 260, and he discussed the circulatory and nervous phenomena associated therewith. In many of the cases the onset was ascribed to physical or mental overstrain (shock), but in others the onset of the symptoms was gradual, and associated only with vague dyspepsia. Restlessness and insomnia were common. He then proceeded to discuss the cases coming in the second group, of which twelve out of twenty-nine were obviously associated with Graves's disease. He narrated two of these cases which served to demonstrate the types. The orator concluded that the conditions in the two sections of cases were closely allied, both being probably secondary to nervous implication. He regarded the differences between the two sets of cases as of extent rather than of kind. With regard to treatment, he said that while in the less severe cases this had proved of great value, it was practically useless in the very marked cases. He particularly commended the application of the continuous current of electricity over the region of the great nerve-centres.

THE ADMINISTRATION OF INSOLUBLE CRYSTALLINE SUBSTANCES.

The use of crystalline synthetic products is becoming now so universal that the best mode of administration of such bodies becomes a matter of considerable importance. It has been found a point of much difficulty to find satisfactory modes of administration, when in the form of fluid media, of such bodies as benzoic acid, antipyrin, sulphonal, naphthol, etc. Various methods have been employed, with the object in v of giving such a substance in the form solution. In some cases it has been rec mended to dissolve the remedy in alco and add it to water sweetened with syr in other cases it has been advised to diss the crystalline organic principle in boil water, and then to add syrup, while in o cases it has been recommended to rub product up with an equal weight of suga gum, and then suspend it in a watery vehi

In a note published in the *Répertoir Pharmacie*, April 10, 1890, MR. M. P. CAR shows that these three different plans are no means equal in effectiveness. After solving in alcohol and then in water, the sulting product is turbid in appearance deposits crystals. In boiling water the soluble part separates slowly and crys form, which cling in great part to the tom, so that the patient, after a very s time, does not receive more than a third half of the dose prescribed, while when crystals are separated by agitation, they o produce severe irritation of the throat, may cause violent coughing or even vo ing. Carles, therefore, is strongly in fa of careful trituration of the crystalline pri ple with its own weight of sugar or g With this method all the crystalline nee are destroyed, and there is, therefore, danger of their reappearing when the s tion cools, and the insoluble particles uniformly suspended in the liquid, especi when it is first subjected to slight shaking

The author, therefore, recommends previous powdering of such crystalline m eral or organic principles with sugar or g and then suspending them in the form of emulsion in water.

A RAPID METHOD OF CURE OF ABSCE OF THE LIVER.

In a paper with the above title, publish in the *Medical Press and Circular* for Ap 30, 1890, DR. VAUGHAN HARLEY tabulat in the following aphorisms, the clinical a pathological facts concerned in hepatic a scess:

1. The hepatic abscesses met with in th tropics, no matter whether occurring in n tives or in Europeans, differ in no essenti particular whatever from those met with i temperate zones, except in one single ite —namely, in that of relative frequency,- i flammations of the liver much more

tly ending in purulent formations in hot in cold countries.

Men are far more liable than women to suppurations.

Although an abscess of the liver may r at any period of life, it is much more mon between the ages of 20 and 50 than y other.

Suppurations of the hepatic tissues are t frequently met with in strumous sub-; and the most unsatisfactory cases of to treat are those in which a syphi- taint is superadded to a constitutional ma.

The most noted predisposing causes to r abscess are struma and alcohol, even n alcohol is indulged in what is usually rded as the limits of moderation.

The commonest of all the exciting es is a sudden chill, as pointed out by William Moore.

All abscesses of the liver tend to evac- e themselves by burrowing their way to surface of the organ, and seeking an let for their contents either directly ugh the abdominal walls, or indirectly general) through the pulmonary or di- tive systems.

It is futile to evacuate a liver abscess er by knife or trocar so long as a free ening is not left to give escape to the sub- uently formed pus.

When an accumulation of pus has taken ce in the liver, it not only tends to do se- us mischief by causing disintegration of e hepatic tissues, but, from its becoming trid, to kill the patient by blood-poisoning. his likewise occasionally happens when hyda- ds of the liver suppurate, which they fre- uently do when they contain daughter ysts.

10. Cancerous and tubercular deposits in he liver, by disintegration, sometimes lead o the formation of purulent formations.

11. As a natural corollary to these facts, Dr. Harley claims that so soon as the exist- nce of purulent matter in the liver is de- ected, it should be evacuated, and the peedier it is done the better will be the patient's chances of recovery.

The presence of pus being suspected, its exact situation should be prospected in the following manner: An eight-inch long fine exploring trocar is to be passed into the liver obliquely from right to left, or *vice versa*, according to the site the abscess is thought to occupy. Then slowly withdraw the instrument, so as to allow sufficient time for a drop of pus to appear at its orifice. If pus be found, its situation and depth in the organ should be carefuly noted. If blood instead of pus flow, the bleeding ought to be encouraged. For in cases of suspected hepatic abscess there is always more or less congestion, and marked benefit is likely to arise from a free hepatic phlebotomy.

The presence of pus having been substantiated, before withdrawing the exploring canula allow as much as possible of the purulent liquid to flow from it. Immediately, on its ceasing to flow through the narrow tube, introduce, in exactly the same direction and to precisely the same depth, a canula of the diameter of a No. 8- or No. 10-sized English catheter, and through it empty the abscess completely by means of an aspirator. When empty, wash the cavity out with tepid water containing ten grains of boracic acid to the ounce, and continue to do so until the liquid returns clear and colorless. Then insert as large a sized silk elastic catheter as will pass through the canula into the abscess cavity, and, on withdrawing the canula, cut off the extruding end of the catheter to within one and a half inches of the opening in the abdominal wall, and securely fasten it there.

This done, cover the whole with a hot, sloppy, linseed poultice.

The abscess cavity should be washed out with boracic acid solution night and morning, and poultices constantly applied until the purulent discharge almost entirely ceases.

If, however, as occasionally happens, the cavity refills, another opening is to be made at a short distance from the first, and a second drainage-tube introduced. This counter-opening, by facilitating the washing-out process, greatly hastens the cure.

The advantages of this mode of treatment are illustrated by the reports of two most unfavorable cases, the first being one in which the patient nearly died from blood-poisoning in consequence of the absorption into the circulation of poisonous pus; second, of a multiple abscess occurring in a greatly-enlarged liver of a strumous patient. Both of these cases, in spite of their unfavorable nature, made exceptionally rapid recoveries. The extreme success in these cases Dr. Harley attributes to the following facts: First, in the employment of boracic acid we have not only a thoroughly safe antiseptic agent, but the great advantage which accrues from the use of one free from the objection of coagulating the albuminoids in the pus, and thereby

inducing a fouling of the instruments, such as is unfortunately the case with carbolic acid and most other antiseptic preparations. Secondly, the daily washing out of the abscess cavity with boracic acid solution not only expedites the healing process, by keeping it clean, but has the further advantage of rendering it quite unnecessary to take any precautions against the intrusion of air into the cavity, no matter how large it is. Thirdly, the washing out of the cavity with boracic solution, from its enabling us to get rid of all the purulent matter, thick as well as thin, does entirely away with the necessity of making a large opening either through the abdominal walls or into the liver tissues with a knife or other instrument, a point of no mean moment, seeing that it is a well recognized surgical axiom that the smaller the breach of continuity in any animal tissue, no matter whether it has been made accidentally or intentionally (other things being equal), the proportionally quicker is the healing process.

SALICYLATE OF MERCURY.

Salicylic acid forms salts by the substitution of metals for the hydrogen atom of the carboxyl group. Under certain circumstances the hydrogen atom of the hydroxyl group may likewise be substituted by metals, and salicylic acid is thus capable of forming two series of salts. The salts of the first series are called primary or neutral salicylate salts. The salts of the second series are called secondary basic salts. The salicylate of mercury is a secondary basic salt, and corresponds to the formula

$$C._6H._4\overset{O}{C}OO>Hg_f$$

This remedy was first formed in 1881 by Lajoux, but was first used in medicine in 1887 by Dr. Aranjo.

Various methods are in employment for the preparation of this salt, which occurs in the form of a white, amorphous, odorless, tasteless powder, almost insoluble in water and alcohol. Caustic soda does not decompose it, but dissolves it in forming a double salt; so also salicylate of mercury is dissolved in solutions of sodium or potassium carbonate, with the liberation of small amounts of carbon-dioxide. Chloride of sodium, chloride of potassium, and the bromides also form with it double salts, which are soluble in water.

As an antisyphilitic, salicylate of me[illegible] may be given internally in the dose of [illegible] $\frac{1}{64}$ to $\frac{1}{25}$ of a grain in pill form two or [illegible] times daily, or it may be given in the [illegible] of intramuscular injection in the amou[illegible] $\frac{1}{6}$ of a grain, with an equal amount of [illegible]tassium carbonate. Externally this salt [illegible] been employed as dressings or as salve[illegible] syphilitic ulcers and mucous patches, an[illegible] an injection for gonorrhœa with potas[illegible] carbonate in the strength of 6, 15, or [illegible] grains to each quart of water.

In the *Zeitschrift für Therapie* for Apr[illegible] 1890, a number of formulæ are given for [illegible] external and internal employment of this r[illegible]edy, of which we reproduce the following

℞ Salicylate of mercury, gr. xv;
Powdered licorice-root, enough to make 60 pills.
Sig.—1 to 2 pills to be taken 3 times daily, [illegible] eating.—(SCHADEK.)

℞ Salicylic acid,
Potassium carbonate, āā gr. ii;
Distilled water, ♏clx.
Sig.—For subcutaneous injection.—(PLUM[illegible]

℞ Salicylate of mercury, gr. xv;
Liquid paraffin, ♏clx. M.
Sig.—For intramuscular injections.—(JADASSOHN [illegible] ZEISING.)

℞ Salicylate of mercury, 1 part;
Vaseline, 30 parts;
Sig.—As a salve or ointment.—(PLUM[illegible]

℞ Salicylate of mercury, gr. xv;
Magnesium carbonate, ʒv;
Sig.—As a powder for external employme[illegible] (PLUMERT.)

℞ Salicylate of mercury, gr. ss;
Sodium carbonate, gr. xv to xlv;
Distilled water, ℥viii.
Sig.—For an injection in gonorrhœa.—(SCHADEK[illegible]

℞ Salicylate of mercury,
Potassium carbonate, āā gr. xv to xlv;
Distilled water, Oii.
Sig.—For injection in gonorrhœa.—(PLUMERT.)

THE INFLUENCE OF THE RUSSIAN STE[illegible] BATH ON THE ELIMINATION OF CERTAIN DRUGS FROM THE ORGANISM OF HEALTHY AND SICK PEOPLE.

DR. SAZONOFF, of St. Petersburg, has c[illegible]ried out two series of experiments (in Prof[illegible]sor V. S. Manasseïn's clinic) to determ[illegible] the effects of a Russian steam bath of fr[illegible] 45° to 52° C., of thirty or forty minu[illegible] duration, on the elimination of iodide [illegible] potassium and salicylate of sodium in t[illegible]

thy and sick. The iodide (*potassium* *um purissimum*) was given always on an ty stomach, one hour before the patient's er, in a dose of 10 grains, either in wafers issolved in one ounce of distilled water. presence was determined both in the sa- and urine. The salicylate was adminis- d in similar doses and under similar con- ons, and was sought for in the patient's e. The principal outcome of the au- r's researches may be condensed some- t as follows (*Medical Chronicle*, May,):

Iodide of Potassium.—Fifty observations wenty-three subjects, of whom nine (seven and two women), aged from 21 to 58, e healthy, while the other fourteen (men), d from 22 to 35, were suffering from upous pneumonia (two), chronic pneumo- (one), intermittent (three), dropsy with emia (two), acute nephritis (three), pleu- y (two), chronic gastro-intestinal catarrh e). Both in healthy and sick subjects the h, as a rule, retards the appearance of the de in their saliva and urine, and prolongs duration of the elimination through either the channels.

Thus, in healthy persons, under normal nditions (that is, without the bath), the t traces of iodide of potassium appeared the saliva on an average of from 6.5 to 9.5 utes after the ingestion; meanwhile, after bath the iodide was first detected as late from 10.5 to 13.5 minutes, the retardation, refore, amounting to about four minutes. he elimination under normal conditions ted for from twenty-four to forty hours, on average for twenty-nine hours. After the th the duration oscillated between twenty- ght and forty-eight hours, the average ing thirty-nine hours; the surplus varied om two to ten hours, averaging six hours. s regards the elimination through the kid- eys in the healthy, the duration under nor- al conditions oscillated between twenty-six nd forty-two hours, the average being thirty- wo; under the influence of the bath, the erage amounted to thirty-nine hours, the mits to thirty-two and forty-eight; an aver- ge increase was seven hours, the limits being wo and fourteen. Of twenty-three cases, in ve only the effects were *nil*, and in one only ome acceleration of the elimination (in a ne- hritic case improving under treatment) was oticed. In some patients (two cases of leurisy, one nephritis, one anæmia with ropsy, and one malarial cachexy), the ex- tion of iodide in the urine was found to be retarded, even without the bath, and, under the influence of the latter, showed a still greater retardation.

2. *Salicylate of Sodium.*—Forty observations on twenty male subjects, ten of them, aged from 22 to 25, being healthy; the other ten, aged from 22 to 65, were suffering from anæmia with dropsy (one), bronchitis (two), traumatic muscular injury (one), acute rheumatism (two), pleurisy (one), chronic nephritis (one), cirrhosis hepatis (one), intermittent (one). In five persons only the bath did not produce any impression on the elimination of the salicylate. In the remaining thirteen (healthy and sick), it retarded the appearance of salt in the urine and increased the duration of the elimination.

Under normal conditions—*i.e.*, without the bath—the first traces of the drug made their appearance in the urine between twenty and sixty—on an average about thirty-three—minutes after the ingestion. Under the influence of the bath, the average rose up to forty-eight minutes, the limits twenty and eighty, a maximal retardation being sixty and a minimal ten minutes. The duration of the elimination under normal conditions varied between twenty and twenty-six hours and averaged twenty-two; under the influence of the bath it oscillated between twenty and thirty-four hours, the average being twenty-six, the limits eight and two. The greatest prolongation was observed in one case of nephritis, one of pleurisy, and one of emphysema in an old man.

3. On the elimination of the iodide, the bath exercised a by far more considerable influence than on that of the salicylate.

4. The retarding action of the bath on the excretion of the drugs may be explained by the fact that the bath drives the blood towards the periphery of the body and *eo ipso* makes all viscera anæmic (S. D. Kostuerin, Godlevsky, etc.). Such anæmic condition of the stomach and intestines naturally must retard the absorption, and a retarded absorption means a retarded elimination. Besides, the bath creates other conditions favoring the retardation; such are decreased energy of the cardiac action, lowered arterial tension, slackened speed of the blood-current, and weakened renal action.

5. A retarded elimination of drugs,—that is, a prolonged sojourn of drugs in the system in contact with tissues,—as induced by Russian baths, constitutes a very important point in practical therapeutics, and hence deserves the attention of the practitioner.

A COMPARISON BETWEEN SALICIN AND SODIUM SALICYLATE IN ACUTE RHEUMATISM, AND AS TO THEIR EFFECT UPON THE EXCRETION OF URIC ACID.

At the meeting of the Royal Medical and Chirurgical Society, held Tuesday, April 22, 1890, DR. A. HAIG (*British Medical Journal*, April 26, 1890) read a paper on this subject, in which, after alluding to the fact that salicin was generally considered to be of less value than a salicylate in acute rheumatism, he said his experiments as to the relative power of these drugs in producing a plus excretion of uric acid showed that, dose for dose, salicylate of sodium had about thirteen times the excretive power of salicin, while salol was weaker than a salicylate but more powerful than salicin. Their action in disease appeared to correspond roughly with their action on uric acid excretion. Salicin gave a much less marked reaction with perchloride of iron in the urine than an equal dose of a salicylate. Cases were brought forward showing the inferiority of the former in the treatment of acute rheumatism. Reference was made by Dr. Haig to his previous paper on salicylates in the *Transactions* of the Society, and the deductions then made as to the causation of acute rheumatism; further evidence was now brought forward. He also alluded to the action of drugs and diet in acute rheumatism, to Dr. Hilton Fagge's comparative tables, and to the effects of meat, exercise, cold, and damp. Speaking of the treatment by alkalies, Dr. Haig said their action as regards uric acid was similar to but less powerful than that of salicylates; the effects in disease corresponded with this. Acids and substances which raised the acidity, such as ammonia, caused retention of uric acid and did harm. The action of ammonia as an acid explained its value in the uric acid headache (migraine). Reference was made to the natural cure of rheumatic fever and to the way in which rest and milk diet affected the excretions. With regard to the excretion of acid from the skin, it was pointed out that suppressed perspiration was immediately followed by an increase of urinary acidity (Sir A. Garrod), while increased perspiration was also immediately followed by a decrease of urinary acidity. The reaction of perspiration under various conditions was described, and quotations from authorities given. Dr. Haig went on to say that the influence of increased skin activity in lowering the acidity of the urine could be easily demonstrated. All methods of treatment that were of any value in acute rheumatism caused a plus excretion of uric acid; and salicin and the salicylates were useful in this disease in exact proportion to their power of producing elimination of this substance. The question was asked, Is acute rheumatism due to uric acid? and reasons were given for thinking that the joint symptoms were due to it. Objections were considered, and remarks were made on the difference between gout and rheumatism. It was said to be partly due to difference in the metabolic processes of young and old. It had been shown by Sir A. Garrod that uric acid was absent from the blood in acute rheumatism. The same author had suggested that inflammation destroyed uric acid. Dr. Haig believed that the uric acid was all driven out of the blood by high acidity and precipitated in the joints, and that such precipitation and not destruction of uric acid explained Sir A. Garrod's observation with regard to the effect of inflammation and the fever of rheumatism. The effect of fever and inflammation on the reaction of the blood and tissue fluids and the urine was described. The temperature was higher, and therefore the rise of acidity greater, and the precipitation of uric acid in the joints more complete in rheumatism than in gout. There were other causes that raised the acidity, as chill and suppressed perspiration, ingestion of acids and acid-forming foods, formation of acids in dyspepsia, etc. The effects of tonsillitis or local inflammation and of bacteria or draining emanations in producing fever and raising acidity were pointed out. The excretion of uric acid in acute rheumatism was referred to, high arterial tension at the end of an attack pointing to excess of uric acid in the blood; anything that raised the acidity at this time would cause a relapse. Conclusions were drawn as to the causation of the joint symptoms of acute rheumatism by uric acid.

DR. NORMAN MOORE considered that if rheumatic fever and gout were looked at from the point of view of anatomy they were two distinct diseases. In gout morbid joint changes were invariably found, while there were none in rheumatic fever. It was curious that if the knee-joints of patients who had died of mitral regurgitation were examined nothing abnormal was, as a rule, seen, although the cardiac condition was dependent on some previous attack of acute rheumatism. In the bodies of patients who had

from rheumatic fever there was often nce of endocarditis; in some cases of also there were changes in the endo- um, but he believed that in seventy-five ent. of cases of gout the endocardium free from disease. In gout, then, one ived permanent injury to joints from ges in the cartilages, but in acute rheu- m transient injury to the joints and anent mischief in the endocardium. cally, at first the anatomical view was rmed and the two affections seemed ct, but from time to time cases were with which commenced as rheumatic and then passed on into gout. He ended that rheumatic fever was a term h covered several distinct pathological itions. Two were distinct,—1, a variety out; 2, a condition closely allied to a septic disease, going on to its most re condition in ulcerative endocarditis. might be due to micro-organisms, which t generate the endocarditis.

R. GARROD protested against the manner hich Dr. Haig was building up theory theory on very fragile facts. He could agree with the close relationship between and rheumatism for which Dr. Haig ended; it must be remembered that gh the children of gouty parents might rheumatic fever, yet very young chil- might have true gout, which was not in least like rheumatic fever. Any theory rheumatism must explain all the symp- s, and he insisted that rheumatic fever a systemic disease, of which the joint- ction was only one manifestation.

SIR WILLIAM ROBERTS stated that Dr. ig seemed to regard uric acid as an es- tially poisonous substance. It must be embered that animals could eat uric acid, have it injected into their blood, without fering any inconvenience. Ebstein as- ted that if a solution of uric acid in phos- ate of sodium was injected into the cornea, crotic changes took place, but that if only a lution of phosphate of sodium was injected, ere were no necrotic changes. This was sup- ed to show the deleterious action of uric d. He did not think any confidence could given to these experiments. Uric acid was rmless until it was precipitated from the od as biurate of sodium. This was a very oluble salt in the blood; in fact, as insoluble uric acid was in water. If uric acid was pre- itated in the joints in rheumatic fever, it ld be found there, as it was very insoluble. a matter of fact, it never was found there.

DR. LAUDER BRUNTON suggested that the reason why uric acid was not found in the joints was possibly because some allied substance was formed which was afterwards excreted as uric acid.

DR. HAIG, in reply, said he believed that the reason no uric acid was found in the joints was because rheumatic fever was an acute disease, whereas gout was a chronic one. He was certain that urates could be got rid of in long illnesses, so that nothing was found in the joints excepting erosions of cartilages. If this occurred in gout, why should it not occur in rheumatic fever? He thought uric acid might be in the joints in solution. Micro-organisms might raise the acidity of the blood, and so determine an attack of rheumatism. Any drug, such as benzoate of sodium, which depressed the acidity of the blood, might be of value in the treatment of rheumatism, whereas benzoate of ammonium, which raised it, could do harm.

ASEPSIS OF INSTRUMENTS EMPLOYED IN THE URETHRA.

DR. PICARD writes in the *Gazette des Hôpitaux*, No. 28, 1890 (*Journal of Cutaneous and Genito-Urinary Diseases*, May, 1890), upon the important and practical subject of asepsis of catheters and sounds before they are passed into the urethra and bladder. He considers, first, the question whether it is always a necessary thing, and the dangers to which its neglect may give rise; and, secondly, by what means the asepsis may be best and most easily brought about. The first proposition is considered incontestable. Although catheterism may be practised, it is acknowledged, for a long time without special precautions, and no ill consequences follow; still, this fact should not produce the idea of absolute innocuity. It has been too much the custom to attribute to the pre-existing disorder the catarrh of the bladder, the urethritis, or the orchitis, which follows at times the passage of a sound. When such an orchitis has been acknowledged as due to the operation, and even called, as it has been, *orchite du cathétérisme*, the fact was recognized, but not explained. If an abscess of the prostate supervened,—a rare accident,—it was admitted that the irritation produced had been too great. All of these conditions, once thought to be due to mechanical action, the author believes to depend upon sepsis.

The general complications which appeared

in the course of catheterism are still less well understood; the urinary fever in its varied types—that of acute frank access, similar to the access of an intermittent, or the slow fever of the continuous fever type—is attributed to resorption of altered urine, or by another theory to a reflex congestion, causing arrest of the renal secretion. Neither gives the key to the question, while each seems to possess some truth. There is, however, no doubt that all of these accidents have for cause infection of the urinary tracts, and are due to want of cleanliness of the instruments employed. The axiom is given that *a clean aseptic sound, no matter how often employed, never occasions purulent cystitis, urethritis, orchitis, urethral abscess, or urinary fever.* To this should be added, provided the urinary tract be not previously infected.

Respecting the means to be employed to secure the asepsis, the author confines himself to those easily secured by the general practitioner. Metallic instruments are most easily disinfected. Boiling in simple water or in salt water is regarded as giving practically the necessary guarantees. Boiling in strong carbolized water is preferable but often impracticable. Soft or semisoft instruments are more commonly employed, and require greater care. The soft, red caoutchouc sound, called after Nélaton, which is the most extensively employed, is one easily disinfected and kept rigorously clean. It may be dipped for a few seconds into boiling water, or it may be kept constantly in a strong antiseptic solution, such as a five per cent. phenic acid or a 1 to 1000 sublimate solution. It is recommended to wash the sound, thus kept in strong antiseptics, before using, either in boiling water or boric acid solution. After boiling, the instrument may be taken up in a clean forceps and placed in a jar containing a saturated solution of boric acid. A thread, previously fastened in the end of the sound, is slipped into a slit in the cork, and the sound is thus suspended, and can be readily withdrawn without handling when needed. Semisoft gummy catheters and sounds are not so easily sterilized. They should be placed in tubes, whose open extremity is then filled with absorbent cotton. The tube is then placed in boiling water and allowed to remain for half an hour, keeping the interior of the tube at 100° C. During this time this heat will sufficiently sterilize the tubes. It will be more prudent to repeat this process several times at intervals of twenty-four hours, for while this temperature destroys adult bacteria, it is without upon the spores. The sounds can b ilized by placing in a tube of boiling

The hands of the physician should b oughly cleansed and rendered aseptic. meatus and glans penis of the patient be washed in a sublimate solution or w water. If the urethra is already infec should be washed out with a saturated tion of boric acid. For lack of these p tions a more or less acute cystitis has again and again set up.

THE DANGERS OF CONSTIPATION CHILDREN.

In a lecture recently delivered befor Paris Hospital for Sick Children, Dr. J Simon (*Journal de Médecine et de Chir* May, 1890) called attention to the fac while diarrhœa occurring in children the object of the most extreme solic both on the part of parents and physi constipation, which possesses almost as danger, was almost entirely neglected. called attention to the case of a girl, 15 of age, who was brought into the hospita fering from extreme abdominal pain, fo ing a fall upon the abdomen, which w is so often the case, followed by an ab in the abdominal walls. The sympt however, rapidly increased in intensity, were followed by vomiting and diarr and the patient died at the end of a days. At the autopsy there was noted eral peritonitis, with a perforation of cæcum, surrounded by an old purulent posit in this region. There was thus ty tis, followed by perforation, which led to formation of an encysted abscess in the vis, and only as the result of injury was eral peritonitis produced. Dr. Simon lieves, from the nature of the lesion obser that the inflammation and the perfora were the consequences of marked const tion, leading to a rapidly fatal terminatio traumatism. He believes that cases sim to the one reported are much more comm than is ordinarily supposed, and he thinks in many cases faulty development and nu ous digestive disturbances are attributabl more or less obstinate constipation. Inde even in some cases death itself may fol either through the production of typh and the perforation of the cæcum, as in present case, or from intestinal obstructi In another case, Dr. Simon stated that he seen death produced by a stercorations tu

ze of a child's head. In such cases the r states that he has frequently obtained ctory results through the employment ctricity, but then, when the obstruction en overcome by this means, it must be ized that the patients are constantly d to a return of a similar state of ; for the intestinal tube, after such distention, becomes the seat of structural ications, so that it becomes almost in- ble of resuming its normal condition. re is thus a practical point to be ob- d, whose neglect may be followed by ost serious complications, and in exam- on for the cause of obscure infantile les the occurrence of constipation as a ble factor should never be overlooked, ially as constipation may be actually red by an apparent diarrhœa.

OUABAÏNE IN WHOOPING-COUGH.

abaïne is an alkaloid with the formula $_{30}O_{11}$, and is obtained by crystallization a watery extract of the roots of the lo, a plant nearly related to the *Carissa eri*. The juice of the ouabaïo plant is as an arrow-poison by the Somalis in Africa.

abaïne, its active principle, occurs in the of rectangular crystals, which are white, parent, colorless, and to a very slight de- bitter to the taste. It dissolves with dif- y in cold water, but much more readily t; it is altogether insoluble in chloro- or ether, and but a slight extent in ab- e alcohol. Its best solvent appears to rtly concentrated alcohol, and this solu- y is increased by heat.

rofessor Gley and M. Arnaud, both of , first studied the physiological effects uabaïne in frogs, rabbits, and dogs, and found that in a frog $\frac{1}{2000}$ grain caused h by arresting the heart's action. In a $\frac{1}{125}$ grain produced marked slowing of respirations, without much cardiac dis- ance; $\frac{1}{100}$ grain first stimulated and slowed respiration, until it ceased com- ely. Subcutaneously, the drug was found ct much more powerfully than when given the stomach; and $\frac{1}{60}$ grain, introduced o the blood through a scratch or other- e, is said to be fatal to man.

Dr. Percy Wilde was the first to suggest use of ouabaïne in whooping-cough, but, as we know, the cases reported by W. GEMMELL in the *British Medical Journal* for April 26, 1890, are the first on record in which this substance has been employed for practical therapeutics. Dr. Gemmell's use of this remedy was limited to whooping-cough.

Treatment was begun in the first case on October 31, 1889, and very small doses were employed at the outset; $\frac{1}{1200}$ grain (or half the lethal dose for a frog) was considered sufficient to start with, but this was quickly found to have little or no effect in controlling the disease. Accordingly, the strength of the dose was increased from time to time, until it was found that the standard dose for, say, a child aged 5 years, was $\frac{1}{1000}$ grain in solution every three hours. Under this dose, if the case was one of moderate severity, the number of coughs and whoops usually rapidly diminished, but in two cases where the children were much prostrated by the violence and frequency of the cough, even this dose was found to be too small, and to them first $\frac{1}{800}$ grain, and latterly $\frac{1}{750}$ grain, was given every three hours. This is equal to about $\frac{1}{12}$ grain daily, and is nearly double the strength of the dose advocated by Professor Gley, who, in a recent communication, estimates the maximum daily dose for an adult as 1 milligramme ($\frac{1}{65}$ grain).

Forty-nine cases of whooping-cough have been treated with ouabaïne. Of these, twenty-five have been dismissed well, four died, and the remainder are still under observation. Of the four fatal cases, one died from diphtheria, one from tubercular meningitis, one from acute capillary bronchitis, and the fourth from gradual and progressive emaciation. None of the fatal cases were under treatment with ouabaïne for a longer period than ten days, one of them only for four, and in all of them ouabaïne had been stopped at least a week before death took place. In none of the fatal cases were there any symptoms which might have been interpreted as indicative of ouabaïne-poisoning.

Throughout the treatment of these forty-nine cases, careful record was kept of the temperature, pulse, respiration, urine, skin, etc., and the effect of the drug on the number and character of the coughs and whoops of each patient in twenty-four hours was closely watched. Except in one case (a remarkably severe one), treatment was not begun until the patient had been eight days in hospital; this was to enable comparison to be made of the periods before, during, and after treatment. No patient was dismissed until at least a fortnight after the last cough had been

heard. It is on the observations mentioned that the following general conclusions are based:

1. Ouabaïne is of marked benefit during all stages of whooping-cough, and, if carefully used, produces gratifying results. In the first stage, it cuts short the attack; in the second, it reduces the violence and frequency of the cough, and diminishes the number of whoops; and, in the third, it hastens convalescence in a remarkable manner.

2. Ouabaïne is a drug which does not appear to be cumulative; its administration can be stopped suddenly without any ill effect beyond an exacerbation of the whooping-cough; it can be as suddenly resumed.

3. Ouabaïne should be given, at first at any rate, in doses not larger than $\frac{1}{1000}$ grain every three hours ($\frac{1}{125}$ grain daily).

4. For children under 1 year of age, the dose should not exceed $\frac{1}{1000}$ grain every three hours.

5. In children of from 6 to 12 years of age, if the cough be very violent, and the whoops are numerous, $\frac{1}{500}$ grain may be given in each dose, but the action of the drug must be carefully watched.

6. Ouabaïne may be given alone, dissolved in water, or in combination with bromide of potassium or chloral hydrate. The simplest way is to dissolve one grain of ouabaïne in distilled water, so that each minim of the solution shall be equal to $\frac{1}{1000}$ grain ouabaïne, as,—

℞ Sol. ouabaïne, ♏xlviii;
Syr. aurantii, ʒiv;
Aquæ, ad ʒvi. M.
Sig.—A teaspoonful every three hours.

All the cases under review were treated in the above way.

7. Under the administration of ouabaïne it is found that the temperature, pulse, and respiration are, in uncomplicated cases, slightly below normal. When the drug is pushed, the respiration, as might be expected, becomes very slow indeed; in one patient, aged 4, it was often as low as 16 per minute. It is from this side that danger is to be expected.

An occasional irregularity of the pulse has been noted, and this always occurred in the evening:

	Morning.	Evening.
Average temperature.....	98.4°	97.8°
Average pulse.....	102	96
Average respiration.....	26½	27½

8. Ouabaïne seems to promote the action of the skin. Within a few days—always less than seven, and usually three—of beginning treatment patients are noticed to be spiring freely, and this is observed to tinue so long as the drug is being The patient ceases to perspire so shortly after the drug is stopped.

9. The movement of the bowels is re the average number of motions daily and a third. In no single instance was any of that diarrhœa which is usuall troublesome a feature in whooping-cou

10. The total amount of urine pas slightly increased. The amount in each of course, varies with the age of the pa The average daily amount in the whole nine cases was fourteen and a half ou The average age of each patient was 4 5 months.

It may be noted that in two of the under treatment sugar was undoubtedly ent in the urine on admission. This b to diminish in quantity, in one inst within three, and in the other within days, after treatment was commenced; in the first case on the eighteenth, and i second on the nineteenth, day of treat the urine was noted as being free fro slightest trace of sugar. It remain during the remainder of residence in pital.

It would be interesting to know wh the same result followed the administr of ouabaïne in diabetes mellitus.

11. Professor Gley points out that 4 d of a solution of 1 in 1000 produce in a r marked anæsthesia of the cornea, which a thesia lasts for about two hours. Dr. G mell failed to find this anæsthetic effect duced in any of his patients, although rep experiments with a solution of the strength have been made in nearly case.

12. The appetite improves. This effe striking, and has been noted in all the tients without exception.

13. The general physical condition proves considerably. This effect also undoubted, although it is to be regre that accurate data as to the weight of patient before and after treatment wanting.

14. The sleep is sound.

THERAPEUTICS OF INTESTINAL ABSORPTION.

At the Ninth Medical Congress, held cently in Vienna, Dr. Leubuscher re paper with the above title (*La Médecine*

, May 1, 1890), in which he called atten- to the fact that intes inal absorption is a plex phenomenon, and certainly not of a ly physical nature, for the epithelial cells, ulation, and the intestinal nervous system lay important parts in this function. It becomes important to recognize the ac- of different medicinal substances on the ctional activity of these different physi- ical factors in intestinal absorption. With object in view, Dr. Leubuscher states that has made a number of experiments, which isted in ligating a loop of intestine and injecting a concentrated solution of a eral acid, so as to destroy the epithelial , and then, after carefully washing out loop, a solution of glucose of a known centage. He found that this solution was h more slowly absorbed after the action he acid than before. In order to study action of the circulatory apparatus in the rption of different substances, he at one ligated the arteries, at another the mes- ric veins, of the intestinal loop which had closed by two ligatures, and found that ture of the veins seriously interfered with rption. As regards the influence of the vous system, he states that he is now oc- ied on a work in this connection, though as already made a number of experiments different remedies which influence absorp- in the two ways already studied,—that hrough the epithelial cells and the organs circulation.

After having ligated in the dog and rat o intestinal loops of equal dimensions, he ected a watery solution of the iodide of assium or glucose, adding to the injec- made into one loop the remedy whose luence on absorption he wished to study. he differences, then, between the quantities sugar or of the iodide of potassium ab- bed from the two loops permitted him to timate the action of the remedy. By the of intestinal fistula, made after the method Thiry and Vella, he was also able to study e quantity of substances absorbed in a loop intestine whose mucous surface was of con- ant, known extent.

The following are the principal results of is researches: Quinine and morphine, even a weak solution, diminish intestinal absorp- ion. Morphine exercises the same action, ven when it penetrates into the organism by e hypodermic method. Alcohol in very k solution (one-half to two per cent.) in- ases absorption, but it rapidly diminishes the solution is made stronger. Glycerin has no action in this respect. Chloride of sodium in small doses increases absorption. Carlsbad water is without influence. Experiments made on man show that the iodide of potassium is eliminated slowly when it has been administered in concentrated alcoholic solution. In the urine the iodide is more rapidly and abundantly eliminated when it is given in a moderate amount of alcohol. In glycerin, water, or milk, the iodide is less rapidly eliminated by the urine.

THE DERMATOLOGICAL VALUE OF SULPHOLEATE OF SODIUM.

Ointments and liniments have been applied to the skin since the earliest days of medicine, and it seems strange that an experience of so many centuries should have produced no change in their composition, for, until quite recently, the base has remained the same,—namely, some animal or vegetable oil or fat. In recent years other bases, such as glycerite of starch, vaseline, and lanolin, have been recommended, and to a certain extent adopted, as substitutes for the time-honored lard, but their advantages have been either slight or offset by some objectionable quality.

Some years ago Dr. George Henry Fox called attention to sulpholeate of sodium, which, while not wholly free from objections, possesses certain properties which render it of great service in the local treatment of skin-diseases, and in the *Journal of Cutaneous and Genito-Urinary Diseases* for May, 1890, he contributes a paper, which is the result of his long-continued experience with this substance.

When sulphuric acid is added slowly to any fixed oil or fat, care being taken to keep the temperature of the mixture below a certain point, a chemical combination is formed, the oleic acid being transformed into what has been called sulpholeic acid.

If sulphuric acid and castor oil, *e.g.*, be mixed in the manner above stated, the result is a thick, viscid, brownish mass, with a strongly acid reaction. The chemical change must take place slowly, and to this end the mixture is kept cool and frequently stirred for about twenty-four hours, or until it is perfectly homogeneous and miscible with water. When the sulpholeic acid thus obtained is combined with an alkaline base, we have a clear, thick, yellowish, semifluid mass of the nature of a liquid soap. Of the various alkalies, soda has been found to be the most serviceable in combination with the

acid, and the preparation of sulpholeate of sodium is, in brief, as follows: To the viscid mass formed by combination of the acid and oil a solution of carbonate of sodium is slowly added under constant stirring and the sulpholeate of sodium is formed. This mixture is allowed to stand for twenty-four hours in a funnel, with stop-cock attached, during which time two distinct layers are gradually formed, the upper one being the sulpholeate of sodium, which is at first held in suspension in the liquid, like cream in cow's milk. This substance has an acrid, bitter taste, and a nearly neutral reaction. Applied to the healthy skin, it has a bland oily or slightly sticky feeling. It contains about thirty per cent. of water, which can be readily separated by evaporation, and the mass then resembles vaseline in appearance and consistency, and makes an excellent basis for ointments.

The value of sulpholeate of sodium, according to Dr. Fox, in the treatment of skin-diseases depends upon the following qualities: 1, its miscibility with water; 2, its rapid absorption by the skin; 3, its remarkable solvent power.

The ease with which anhydrous sulpholeate of sodium can be mixed with water, gives it an advantage over the fatty substances commonly used for application to the skin. It makes, in fact, a soluble ointment,—one which can be washed from the skin as readily as it can be smeared upon it. In cases where it is not desirable to keep an ointment upon the skin both day and night, those made with lard, vaseline, or lanolin as a base are objectionable, since the effort to remove the greasy substance often requires the use of soap and friction, and thereby tends to aggravate an inflammatory eruption. With sulpholeate of sodium as a base, the ointment can be removed from the skin with the greatest of ease by means of a little water or even a moistened rag. In this respect the sulpholeate ointments are unlike any which have been in use, save those made with glycerite of starch as a base.

It is this affinity for water which enables sulpholeate of sodium to sink into the skin more readily than vaseline or fatty substances. In regard to the best basis for ointments, there has been considerable discussion, but, in determining this question, the object to be attained by the use of the ointment must be borne in mind. When a simple protective dressing is required for the surfaces of the skin, as, *e.g.*, in a case of acute eczema of an infant's face, vaseline or its equivalent, the petrolatum of the U. S. P[harma]macopœia, will prove of excellent ser[vice]. But when it is desired to act upon the de[eper] parts of the skin, or to convey medicinal [sub]stances into the blood by means of cutan[eous] inunction, vaseline is far inferior to lard, l[a]olin, oleic acid, or the sulpholeate of sodi[um]. The latter substance is largely used in [the] arts as a solvent and vehicle for dye-st[uffs]. In the process of wool-dyeing it has b[een] found to be of the greatest service on acco[unt] of its power of penetrating the keratinic t[is]sues. It is this same property which ena[bles] it to sink readily into the epidermis, and r[en]ders it of value in the treatment of var[ious] chronic skin-diseases.

But the chief recommendation of sulphole[ate] of sodium is its remarkable power of d[is]solving certain substances for which we h[ave] heretofore had no available solvent. Sulph[ur], chrysarobin, and other drugs of great va[lue] in dermatology, have heretofore been appl[ied] to the skin in a finely-triturated but un[dis]solved condition. Such drugs have, the[re]fore, exerted their action solely upon the s[ur]face of the skin, except when friction h[as] forced them mechanically into the follicl[es], where perhaps a certain amount of absor[p]tion has taken place. The beneficial effe[cts] of these drugs thus applied cannot be c[om]puted, but when we consider that sulphole[ate] of sodium will dissolve at least two per ce[nt] of sulphur or of chrysarobin, their increas[ed] efficacy can readily be imagined. Other s[ub]stances commonly used for application to t[he] skin are readily dissolved in any desira[ble] quantity.

There are three forms in which sulphole[ate] of sodium may be advantageously used in t[he] local treatment of skin-disease,—1, as an u[n]guent; 2, as a liniment or liquid applicatio[n]; 3, as a plaster.

As a basis for ointments, the watery el[e]ment must be removed by evaporation un[til] a suitable consistence is attained. As th[is] process necessarily involves time and trouble, the ointment thus prepared will be more e[x]pensive than those made with lard or petro[la]tum as a basis, and in most cases will possess no corresponding advantage.

As a liniment, employed for the purpose of conveying various medicaments into or throu[gh] the skin, the hydrated sulpholeate of sodium has proved in Dr. Fox's experience superi[or] to any substance which we now possess. While it sinks into and softens the skin li[ke] glycerin, by virtue of its hygroscopic pro[p]erty it has the additional and i[mportant]

tage, already mentioned, of dissolving and ying various substances with it.

ixed with gelatin in proper proportions spread thinly upon muslin, sulpholeate odium makes a plaster which adheres ily to the skin when moistened, and is rior in many respects to any heretofore d.

heoretically, the sulpholeate of sodium is bstance of neutral reaction, and perfectly d when applied to the skin. Practically, ill be found, especially when carelessly de, to contain a little free acid, and may s produce a slight amount of irritation en applied to a delicate or acutely inflamed n. Dr. Fox admits that in the treatment cute infantile eczema, where one might e for the best results from the use of solu- ointment, he has only met with disappoint- nt, but in the use of all stimulating appli- ions he has found sulpholeate of sodium be a vehicle of the greatest service.

OCAINE ANÆSTHESIA IN THE IODINE TREATMENT OF HYDROCELE.

The treatment of hydrocele by the injec- n of iodine occasions an amount of suffer- g which is sometimes almost insupportable, d, on the discovery of the properties of caine, the idea naturally suggested itself removing the sensibility of the part by the jection of this alkaloid before the injection the iodine.

In the graduation thesis of Paris, 1889, R. R. SPILMANN (*Gazette Médicale de Paris*, ay 10, 1890), instead of advising the injec- on of the cocaine after the evacuation of e hydrocele liquid, recommends the intro- uction of a solution of this alkaloid, by eans of a hypodermic syringe, into the sac efore the puncture with the trocar is made ; o that, therefore, anæsthesia is produced be- re the puncture, and, of course, before the jection of the iodine. The reason for this ocedure is, that if the hydrocele liquid is st evacuated, there is greater possibility of e cocaine injection failing to come in con- ct with the entire surface of the sac, and, s a consequence, pain may still follow the in- ction of the irritant ; but where introduced to the distended sac, the anæsthetic comes to contact equally with the entire extent of e surface of the sac. He allows twenty inutes or half an hour to elapse between e injection of the cocaine and the tincture iodine. The strength of the solution is ten per cent., while the author varies the quantity according to the volume and the duration of the hydrocele.

THE INNERVATION OF THE HEART.

According to the Vienna correspondent of the *Lancet* for May 17, 1890, at the recent Ninth German Congress for Internal Medicine some very interesting papers were read in relation to the heart. One by DR. ROMBERG, of Leipsic, on the "Innervation of the Heart," attracted special attention, as pointing to another direction in which the investigation may be pursued. Having observed in the heart of a patient who had died from typhoid fever inflammatory lesions around the ventricular nerves and auricular ganglia, Drs. Romberg and His were induced to study the embryology of the cardiac nerves. Sections of the human fœtus were made, and a plastic reproduction of the nerve distribution was obtained by Dr. Born's plate method. The first appearance of cardiac nerves could be detected in the fourth week, when ganglia, detached from the sympathetic chain, migrated into the heart. In the second and third month the deep and superficial aortic plexuses were formed, while the ventricles remained without any ganglia. Therefore the cardiac ganglia must be regarded as offshoots of the sympathetic ganglia, and as the latter belong to the system of the dorsal roots of the spinal cord, the cardiac ganglia are not motor but sensory nerves, and they cannot represent an automatic cardiac centre, as has previously been assumed. This view, based on embryological investigations, is corroborated by well-known physiological observations,—for example, by the fact that the heart of the embryo beats rhythmically long before it possesses nerves or ganglia. The experiments made by Woolridge in this direction were also mentioned by the lecturer. Dr. Romberg believes that the heart-muscle is the automatic motor force of the circulation of the blood without being stimulated for this purpose by the nervous elements. According to this view, the pathological study of the cardiac muscle becomes still more important. In pathology changes, as well as in experimental toxicology, the state of the heart-*muscle* must be taken into consideration. To the cardiac ganglia the lecturer ascribed a reflex influence by which the vagus and accelerator nerves are brought into action. After the lecture, Dr. His, of Leipsic, ex-

hibited very instructive drawings and models of the preparations relating to the innervation of the heart, showing the distribution of the cardiac nerves in the human embryo from the fifth to the eighth week. In the discussion, Professor Basch, of Vienna, pointed to the facts of experimental pathology (muscarine poisoning), which were in favor of Dr. Romberg's view, that the automatic heart-beat is not caused by the action of the cardiac ganglia, but by the automatism of the muscles. Dr. von Frey, of Leipsic, spoke on the relation between the pulse-wave and the closure of the valves. He had made experiments on animals regarding the influence of the closure of the valves on the form of the pulse-wave, and arrived at the conclusion that the configuration of the pulse-wave is varied according to the different parts of the arterial system, and that this variation corresponds to the difference of the distribution and pressure of the blood of the respective parts of the body.

CHLORIDE OF ZINC IN THE TREATMENT OF UTERINE CATARRH.

Many cases of mild uterine catarrh exist, either of the cervix alone or of the cervix and body, which are quite rebellious to ordinary methods of treatment. Such cases are claimed by Dr. Vergely (*Archives of Gynæcology*, May, 1890) to be most satisfactorily treated with chloride of zinc solution. The treatment is commenced eight days after the termination of menstruation, and in the absence of any pain in tissues contiguous to the uterus or ovaries. The vagina and cervix uteri are first irrigated with a hot fifteen per cent. solution of boric acid, combined with a 1–200 solution of sublimate. The uterine cavity is then carefully cleansed of all mucus, and a five per cent. solution of the chloride of zinc applied over the entire surface of the mucous membrane. This operation is repeated two or three times, at intervals of eight days, and a more concentrated solution of the zinc may be used, if indicated. The application is rarely painful, excepting in cases in which there is much congestion or inflammation. In the latter case, the zinc may excite bleeding, which may continue moderately for several hours. Should there be fungosities, or should the ulceration not yield promptly to the zinc treatment, one may employ a solution of chromic acid (1 to 3). The latter gives very little pain, and produces a yellow slough, which falls off in about six days. It may well to alternate the chromic acid with zinc. Great care must be used that these lutions are applied only to the diseased sues, and after their use the tissues should again irrigated with the boric acid sublim solution, this being followed by the introd tion of a vaginal tampon of cotton, wh should be retained twenty-four hours.

ANTISEPSIN OR PARAMONOBROMAC TANILIDE.

The experiments made by Dr. Catt on a number of cases of phthisis, typh fever, and pneumonia seem to show t paramonobromacetanilide is endowed w marked antifebrile properties. The reme in doses of 7½ grains, produces a reduct in temperature of 2° or 3° C. (*Gazette M cale de Paris*, April 26, 1890). Unfo nately, however, the antithermic effects accompanied by a cyanosis, which is e more marked than that which has been served to follow the administration of a febrin. The transformation of hæmoglo of the blood into methæmoglobin, follow this cyanosis, makes the use of this reme as a febrifuge a dangerous procedure.

On the other hand, Cattani has discover that topical applications of this substance ert a marked antiseptic action, not only fac tating the cicatrization of wounds and ulc but also reducing pain at the point of ap cation. In case of hemorrhoids, he has e ployed it in the form of suppositories, grains to 45 or 60 grains of cacao-butter, has obtained excellent results. Of these, uses two suppositories each day, and fou that they prevent suppuration and inst asepsis of the region subjected to this lo medication.

GLYCERINUM SAPONATUM.

According to the Vienna correspondent the *Medical Press and Circular* (April 1890), Dr. Hebra, at the Vienna Derma logical Society, read a paper on the use saponated glycerin as a vehicle for p scribing medicine, which he highly reco mends to the profession. He described th preparation as an alkaline fat obtained in manufacturing of soap, which is dried, then into small pieces, and dissolved in glyce This product is again heated and filter and allowed to cool, when it forms a st yellow, transparent, and somewhat alka

ne, which is perfectly odorless, melting at dy heat, and easily soluble in water. As a is for ointments, he related a number of es successfully treated by the preparation, d expressed a hope that his colleagues uld give it a favorable consideration.

Dr. Hebra is so confident of the efficacy of s vehicle that he asserts its potency with licylic acid and creosote to cure that in-actable disorder, lupus. His prescription s ninety per cent. of glycerinum saponatum, e per cent. of salicylic acid, and five per nt. of creosote. This will cure lupus with-t the slightest pain being experienced. He o assures us that there is no other remedy powerful as a bactericide. This prepa-ation is no less powerful in its curative ac-n in tubercular skin-diseases, as Tyloma ra, etc. For the rest of the skin-diseases has different preparations, where glyceri-m saponatum is the basis, and all are con-dently recommended as efficacious in cuta-ous disorders. He admits that he has not hausted the different combinations with hich this vehicle may be administered with efficacious results.

THE RADICAL CURE OF HYDROCELE BY THE INJECTION OF PURE CARBOLIC ACID.

Surgeons are not yet agreed as to the best ethod of radical cure of hydrocele, for while me advise incision, or even excision, of the c, others prefer less radical measures, and especially simple puncture, followed by injec-ion of tincture of iodine.

Dr. Levis, of Philadelphia, in 1872, sug-gested the replacing of the tincture of iodine by carbolic acid, and his proposition since then has been acted on a great number of times by numerous operators, solutions of carbolic acid being employed in various de-grees of concentration or even the pure acid. In the graduation thesis of Paris of 1889, LAMBERT (*Gazette Médicale de Paris*, May 10, 1890) recommends as possessing especial advantages the use of pure crystalline car-bolic acid, liquefied either by heat or by the addition of a few drops of water or of glyc-erin. In the dose of 30 to 45 grains it pro-duces some pain, with a sensation of heat, such as is observed in the employment of the tincture of iodine; the reaction which follows, the author claims, is ordinarily moderate, and the swelling, which is never accompanied by fever, is slight, never reaching the volume of the hydrocele before the operation. Appetite is preserved, and the dissipation of the liquid is rapid and without danger, while the patient is not prevented from attending to his ordi-nary occupations. Unfortunately, however, this view of the author's is not quite warranted by the facts in the case, since three cases of failure have been reported by Dr. Monod and others. More or less severe accidents from its employment have rendered the use of carbolic acid as an operative procedure now much more seldom employed than for-merly, and a measure which, in freedom from danger and success, cannot compare with the injection of iodine after the previous produc-tion of anæsthesia through the use of cocaine.

Reviews.

HOW TO PRESERVE HEALTH. By Louis Baskan, M.D. All rights reserved.
New York Exchange Printing Company, 1890.

This is a book on a topic of general inter-est. The public would except the medical profession, whom they choose to imagine and picture as gloating over the misery and ex-ulting at the sickness of humanity. Yet how mightily the profession has striven in this very cause of hygiene, let all modern discov-ery, yes, the very science of hygiene itself, bear witness. Who without the doctor would have ever known about drains and bad smells? Who would have imagined but for him that air, earth, and water swarm with deadly or-ganisms, the modern substitutes for the demons of antique theology? Yet, after all this work, we are still held up as alarmists, and as eager to assist rather than destroy the enemies of man, whose name is "legion."

And now, as another proof of the efforts of our noble profession, we have this work on "How to Preserve Health," a work which is but one of many such, and, for all their affected derision, the public takes largely to them, reads them with avidity, and gets as little good from them as possible. But all works on hygiene are not of equal value and authority. Let us see what Dr. Baskan has to say.

Now health and longevity, though often confounded in the uneducated mind, are quite different things, but in one point they agree. A man may live in defiance of some of the laws of health to a great age, and a man may be healthy to whom the principles of hygiene are utterly unknown, but these are the fortunate exceptions. Between those who

will survive anything and those who are bound to succumb to any and everything, there lies the vast multitude who can be saved did they and others realize it, and who practically go down to premature death for want of a helping hand.

These are the poor and overworked. These are the myriad dwellers in unhealthy houses and unsanitary surroundings of every sort. The inhabitants of malarial regions, to whom drainage would prove salvation, these die and give no sign; but besides these the world is left with a multitude of prematurely aged, hopelessly diseased, blind, halt, and maimed, a burden on its hands, which might never have existed had the laws of hygiene been followed. To all such Dr. Baskan appeals. Yet we fear he will appeal in vain, for, after reading his advice, the public, which drinks sewage and glories in it, which laughs at trichinæ and derides microbes, will be only too ready to scoff and jeer, as it realizes the price it would have to pay for prolonged life and unimpaired faculties, and the public has somewhat the best of it in this case. Take the chapter on "Hygiene of the Taste," and realize what it would be to go through life without once forgetting "the little wart-like excrescences which contain the terminal filaments of the gustatory nerve," without ever tasting anything hot or cold, sharp or spicy. From all such agents the tongue, the author tells us, should be "protected," "from burning, irritating, and sharp substances, like tobacco, spices, pickles, and from food and drink either too hot or too cold." How to protect the tongue the author does not tell us. Possibly he has ready to spring upon the public some tongue-protector of which we have no knowledge; but, if not, avoidance must be the only protection.

And to what self-denial will it condemn us. One must eschew "burning kisses," cigars, and pipes. One must be life-long debarred from the profession of "glass-eater," so successfully followed by the late Wm. Jones and others, now no more. But alcohol is left. Hot tea and coffee, iced food and drinks, all these must be avoided. But, guided by the thermometer, we may safely—for all the author has to say—imbibe many cooling and generous beverages. Hygiene is not always a cruel mistress.

But the tongue, unruly though it be, is but one of many members. Let us study the nose and its hygiene. "It should never be picked or bored, nor should foreign bodies be introduced." This, of course, shuts us off from the ministrations of the nasal specialist. N should we breathe very cold air, or dusty or smoke. Hence we should avoid cities, even dusty country roads, and live surrou by grass and flowers. Flowers, alas! they are interdicted. We, as far as our noses concerned, may gaze but not smell. "It m happen that an insect is drawn into the no However, we can use strong snuff, but mo erately, for "excessive use of strong snuff injurious."

The eye, too, needs care. We should ne in a bright light look at "snow-fields, sa plains, limestone cliffs, bodies of water, w painted with light colors in oil, polished f niture, or any shining object." Hard ca jewelry, and diamonds are shining objec We should never look at them, but go pen less and forlorn, with "blue or colored glass and a blue veil and a white parasol with blue lining." We should frequently close t eyes, or "fix them on objects of a dull color Nor should we ever read or write by artifici light. In fact, in the day-time we should re only books printed in large Roman type. O days when there are a "few thin clouds ov the sun," our very clothes should be hygieni We should dress like the ancient Greeks an Romans, or the Orientals of to-day, or ado the "costume of the American mountaineers, whatever that may be. The author here re marks with profundity that "the climate o America is a milder one than we or our a cestors have been accustomed to in Europe, a statement that becomes more profound an perplexing the more it is considered.

In regard to the "Hygiene of Kissing," the author says, "Never allow your child t be kissed on the mouth. . . . Teach him t turn up his cheek." But can the true Ameri can child need to turn up an organ so abnor mally developed?

Perhaps the real causes for the oft-la mented decay of American oratory are to b sought in the increased care of the voca organs which education enforces. "The ai we inhale passes through the vocal cords." It cannot be prevented very well. But, un fortunately, there are so few good, reliabl kinds of air,—cold and hot air, dusty and smoky air, tobacco- and gas-laden air are so common that one hardly knows what to breathe, and "the throat should never be subjected to prolonged exertion in loud singing and speaking."

Under "Health and Morals" we find "peo ple with clear consciences sleep soundly an digest well as a rule." Still more, "a life-in

rance policy for a good sum, issued by a pany of high standing, is the best means" ecure mental quietude, next to a clear cience; and, in fact, as death draws r, it is a trifle better. When recovery possible, the policy also acts as a valu- e therapeutic agent. All persons who are osed to "glanders, poison of dead bodies, d that from sausages," should wear rub- r gloves. All sorts of protective agents e favorites with our author; and, when comes to attending the sick, the nurse d doctor are so bundled up in mackin- hes, rubber gloves, and aprons, with the ition of his favorite respirator for all tagious cases, that the spectacle pre- ted by these people, dodging about on windward side of the bed, lifting the ers on the side away from them, keeping long distance off, and working a spray paratus all the time, must, it seems to us, so ludicrous as to act beneficially on the ient if he possess a true sense of humor, d tend to promote cheerfulness and mirth. attendant is ever to approach the sick h an empty stomach; and, as our knowl- ge of physiology has its limits, a nurse in stant attendance must be constantly eat- g. Every one must have hair and whiskers sely cropped, and be always bathing and infecting, so that between eating and thing, and putting on gloves and respira- r, there would be but little time left for her minor duties, such as attending to the k person and his wants. The medicine is small matter, and will take little time, for should be limited to "the smallest possible quantity."

The author believes in the double action of drugs, for, as some patients take more than directed, he says, concerning drugs, "they have in other instances precisely the opposite effect from that intended," and "many substances act in quite a different way when taken in overdoses from what they do when administered according to di- rections." For all this, clergymen and school- teachers, where doctors are scarce, are ad- vised to possess themselves of "a certain amount of medical knowledge" and "a small stock of medicine," probably the smaller the better.

But we may be excessively careful about our eyes and ears, nose and mouth, food and morals; we may make guys of ourselves with blue goggles, veils, and parasols; stalk about in Roman togas; live in the remote country, ar away from dust and smoke; but, with all our care, accidents may befall us and injure us, if they do not cut us off in the flower of our days, one of the few flowers, by the way, in smelling which we need not dread snuffing up a bug. We may faint,—to select a minor accident,—and the author is ready with his advice,—"he should be placed in a recumbent position." Supposing us to be a female, some uncertainty might arise. "His temples must be bathed with vinegar and ammonia, and his nostrils fumigated with burnt hair and feathers." When he comes out he should drink a "little brandy and water." Now men seldom faint, and we cannot but think, when we consider the veil and parasol, that the au- thor here advises treatment by proxy; and, in the event of a faint occurring in a married or engaged woman, would suggest that the treatment be administered to her husband or lover. We judge this more certainly from the concluding advice. We think the burnt feathers might in many cases be endured if followed by the brandy and water.

But if the faint be not an ordinary one? The subject will probably be male. Here a condition of trance may simulate death, and the attendant has to furbish up his medical knowledge. Here the author is at his best. Are the cornea and conjunctiva dry and wrinkled? The case looks dubious, but "dip a cloth in caustic ammonia and rub the skin till the epidermis is removed." Whether entirely removed or only partially we are not told. But the author is generally thorough. Listen to his heart. If its sounds are doubt- ful, thrust a fine aspirating-needle between the fifth and sixth ribs into the heart-muscle, "an experiment attended with no danger when the needle is not inserted too deeply," and watch the quivering of the projecting part of the needle. When it ceases to quiver, the man is dead. But "the surest test for a layman is decomposition, which begins with a bad odor and green spots upon the skin." Then the layman knows the physician has been already quite satisfied with his little needle experiment, but the layman had bet- ter sit down quietly and watch for green spots.

The treatment of a person apparently dead "should be begun by freeing him from rib- bons about the neck, noxious gases, and water in the air passages in the case of those nearly drowned." The ribbons are very important. Most men wear them,—pink ribbons, with a green stripe in the middle. This accom- plished, he should be placed in a room filled with fresh air, his clothing removed cautiously

but quickly, and an effort made to restore him by warm applications, baths, washings with vinegar, rubbing, tickling the mouth and nose, using ammonia, dropping naphtha and oil of mustard on the præcordia, and, after valuable time is thus wasted, artificial respiration, the most practical method of doing which is the method, the author tells us, of Marshall Hall, but, in speaking of Sylvester's method, he terms it the best.

"Upon the revival of the patient, the efforts for his restoration should be remitted at times." This is a valuable hint, for recovery would be but a doubtful blessing were either method to be forever after kept up.

We hesitate to go further. Enough of the author's work has been investigated to show how thoroughly he has entered into the spirit of hygiene. Doubtless, we should all live longer and preserve our faculties better were we to follow his advice, but one may pay too high a price for a really excellent article, and self-preservation is not the highest virtue at all times and under all circumstances.

E. W. W.

MONTHLY NURSING. By A. Worcester, A.M., M.D. Second edition.
New York: D. Appleton & Co., 1890.

Probably a thoroughly acute, energetic, and capable woman, when about to engage in the occupation of a monthly nurse, will, if possible, endeavor to obtain practical training in some institution where classes are taught. But many things may stand in her way. In our large cities a nurse without a good diploma finds herself left out in the cold, unless her reputation has been already established before the present era of trained nurses. Even with influential friends in the profession her success is slow and uncertain; but in the smaller towns, what few of them are not yet medical centres, it is yet possible for a self-trained nurse to succeed. She needs, to start with, good intellectual capacity, handiness, quickness of mind, and a good constitution, and these, supplemented by self-teaching, may result in a very good, useful nurse. Of course, before she has had much actual experience, she may make mistakes, but with such a one every case will tell, and she may hope in almost any community to obtain from one or more of the physicians in her neighborhood help over hard places if she displays ability and modesty. The great error of the self-taught is by no means self-depreciation. Far otherwise. And one great lesson of the training-school is to show her when to [be] dependent and when independent. Bo[oks] she must have, and good ones; but of th[ese] there is no lack. Every department of nursi[ng] has its primers and guide-books. Most [of] them are good. The one before us, d[e]voted to monthly nursing, is above [the] average. It does not teach too much. T[he] author wisely says, "In the science of [o]stetrics and in the common text-books th[ere] is much that nurses never need know. How many writers of these manuals [for] nurses have taken this fact to heart? a[nd] alas! how many have not? The author g[oes] quite far enough. His nurse will know how [to] extract a fastened placenta, and do ma[ny] other things, which, though generally in [the] province of the physician, may, on em[er]gency, fall to the nurse. And, above all, [a] careful study of Dr. Worcester's book [will] make her more useful in keeping her [pa]tient out of trouble than ready in extricat[ing] her from it. The book is peculiarly str[ong] in the hygiene of the lying-in room. [A] short treatise on cookery for the sick is [ap]pended, which seems sensible, and will pr[ove] useful.

E. W. W.

A GUIDE TO THE DISEASES OF CHILDREN. [By] James Frederic Goodhart, M.D., F.R.C.P., etc. [Re]arranged, revised, and edited by Louis Starr, M.[D.], Clinical Professor of Diseases of Children in the H[os]pital of the University of Pennsylvania, Physician [to] the Children's Hospital, Philadelphia, etc. Seco[nd] American from third English edition, with numer[ous] formulæ and other illustrations.
Philadelphia: P. Blakiston, Son & Co., 1889.

We have already noticed in this journal [the] first American edition. All that was then s[aid] in commendation of the original work and [of] the editor's efforts for its further improv[e]ment we might repeat even more forcib[ly]. Dr. Goodhart's book is, for its size, the m[ost] complete, useful, and original book on t[he] subject that we know of. The omission [of] the brackets around the editor's additio[ns] and suggestions, which the editor consid[ers] an advantage, seems to us at best a doubtf[ul] one. There is now some uncertainty as [to] what the author says and what the edi[tor] says. One becomes slightly mixed. Still, [a] careful reading often clears the matter u[p]. The editor's additions on the topic of infa[nt] feeding are so excellent that one is dispo[sed] to resent the possibility of their being m[is]taken for the author's rather than the editor's work.

E. W. W.

Correspondence.

PARIS.

(From our Special Correspondent.)

erce Battle about Kola and Kola-Red—Physiologi- Effects of Potassium Ferrocyanide—Leprosy is ntagious — Goat Vaccine — Glanders Inoculable rough the Healthy Skin—The Arthritis Microbe.

Kola nut has been the object of a pro- ted and rather acrimonious discussion ore the Academy of Medicine. Dr. ckel, of Marseilles, and Dr. Germain , of this city, were the principal debaters e controversy which lasted over several ngs, and while the sturdy champions ex- nged several hard knocks in the way of *minem* arguments, not usual in the learned mbly, interesting information respecting properties of kola nut was elicited. One he points at issue was the priority of dis- ering the drug's special properties as a derator of tissue-waste. Dr. Heckel med he was the first to introduce kola- biscuits as a help to foot soldiers and ine climbers, when long marches and ch fatigue are to be endured. He in- ed upon the fact that kola, although con- ing about the same proportion of caffeine coffee, is much more active and will pro- e different effects. The first complete lysis of kola was published in 1884 by fessor Schlagdenhauffen, of Nancy, and Heckel, and showed the seed to contain 32 per cent. of caffeine, .23 of theobromine, 59 of tannin, 1.29 of kola-red, 6.76 of pro- matters, and 33 of starch. Although the e nature of kola-red has not been ascer- ned, it plays a most important part in the siological effects of the drug. Unfortu- ely, owing to the indefinite character of e principle, army physicians were opposed the substitution of kola for coffee in the tions of soldiers having to undergo un- al physical wear and tear. The opposi- on was all the more to be regretted that the German army, although an inferior rt of kola, procured from England, is em- oyed, kola biscuits have been successfully troduced, while in civil life Alpine tour- s have found them of great advantage in eir excursions. Hence the Academy was ppealed to, so that the importance and alue of kola be better appreciated, and the rejudice against it as a strategic aliment e removed. Dr. Germain Sée replied that, nce Dr. Heckel owns to his ignorance of kola red's true nature, the value of so hypothetical a principle may as well be set aside, and one is justified in sticking to the prevailing opinion that kola nut has no other properties than such as belong to the caffeine and theobromine therein contained. And even theobromine should be considered of doubtful value, as it is not itself a very definite principle. Finally, Dr. Heckel's opinion cannot be accepted, since "Dr. Colin, of the army and himself (Dr. Germain Sée) consider coffee for the present preferable to all similar products." It will, no doubt, strike the reader that because kola-red is not a definite principle, and some physicians prefer coffee, it does not follow that kola is worthless. The drug should be judged on its merits and not on theories. Cinchona cured fevers before quinine was known, and kept on curing them, in spite of Raspail and others, who declared quinine to be rank poison. And even now digitalis leaves will produce therapeutical effects, which cannot be had from either digitaline, digitaleine, or digitoxine, and chemists freely confess their inability to discover the true active principle or principles of digitalis. Dr. Heckel hinted about as much in his retort, but soon the debate took a decidedly personal turn. Some sneering allusion having been made to the circumstance that the kola preparations were introduced on a commercial scale, Dr. Heckel replied that every one in Marseilles knows—his friends especially do but too well, who lent him financial support—that his experiments have been very expensive and unremunerative. "Others," he said, "more skilful or more fortunate, have been successful pecuniarily with similar matters, while I only spent much money. At the same time I am perfectly certain Dr. Sée, whose scientific disinterestedness is universally known, would have acted as I did myself." The double-edged compliment brought a smile to the faces of all present, who know full well the unsavory job about antipyrin. Yet Dr. Germain Sée was bound to have the last word. "Dr. Heckel," he said, in substance, "claims kola-red to be the main principle of the drug, and more important than caffeine. But no one ever heard of his experiments to prove the fact. I am aware he has the intention to free his preparations from a certain aphrodisiac essential oil, the delight of Guinea negroes, but a great inconvenience to our bachelor soldiers. Yet he has never separated out the caffeine to ascertain the value of kola red by itself. As to his claim of priority in dis-

covering the advantage of caffeine as preventing tissue-waste, I shall call attention to my investigations with Drs. Lapicque, Parisot, and others, which show the tissue-saving theory to be contradicted by all physiological laws of nutrition. Caffeine will not replace aliments, but only the excitation caused by aliments, and this is all. If he still persists in the hypothesis, I leave to him, without regret, the merit of it for what it is worth." Amidst all the rather amusing special pleading, several interesting facts remain,—namely, the probable virtues of kola-red, the existence of an aphrodisiac essential oil in the nut, and the claim that the French get the best kola nuts produced from their African possessions. All thought kola exhausted, when, at the May 20 academical sitting, Dr. Dujardin-Beaumetz reopened the subject, to soon conclude it, however, as it were. He said that in 1884, having with Dr. Monnet examined the drug's therapeutical virtues, they found it to possess marked diuretic properties, evidently due to the constituents caffeine and theobromine, and astringent virtues referable to the large percentage of tannin. But they observed also manifest tonic properties, which are quite distinct, and may possibly be attributed to the kola-red noticed by Dr. Heckel. For the present, however, in the absence of decisive experiments, it would be idle to further argument on mere hypothesis. A wise remark, which, it is hoped, will end a useless discussion.

No little difference of opinion existing as to the therapeutic value of potassium ferrocyanide, Drs. Combemale and Dubiquet, of Lille, have instituted a series of experiments on animals, to ascertain the physiological properties of the compound, and reported the results to the Paris Society of Biology. The salt was administered by the mouth, dissolved in distilled water, and in doses varying from .08 gramme (1¼ grains) to 2 grammes (30 grains) per kilo (35 ounces) body-weight, to six dogs and six guinea-pigs. The effects, as gathered from eighteen experiments, were found quite different with the different sorts of animals. On dogs the ferrocyanide, in doses of from 60 centigrammes (9 grains) to 2 grammes per kilo of body-weight, generally caused vomitings, no matter whether the solution was concentrated or diluted, and occasionally diarrhœa and bloody passages. More seldom still, both purging and vomiting occurred, but never could diuresis be obtained. In vain the doses and dilution were varied. The quantity of urine never increases, but, on the contrary, g less in two instances. With the guinea the case was altogether different, diuretic tion being most manifest. No matter w were the doses given,—from 25 centigram (4 grains) to 1.50 grammes (24 grains) formly dissolved in 25 c.c. of water,— stant polyuresis was observed. On the o hand, no purging or irritating action was ticed. The next interesting point being determine the form of elimination, the ur were examined. They were found, two h after administration, to contain both fe cyanide and ferridcyanide of potassium, later, or after small doses, ferridcyanide clusively. The same compound could be tected as long as twenty hours after the d From these observations it seems probe that the molecule of ferrocyanide in the e omy condenses into ferridcyanide, and, losing two atoms of potassium, operates diuretic on animals which, like guinea-p cannot vomit. The Lille scientists e cluded as follows: 1. Potassium ferrocya is not poisonous for animals, even in dose 2 grammes per kilo of body-weight. 2. not a diuretic for the dog, but is for guinea-pig. 3. It is in the economy tr formed into ferridcyanide, and eliminate such, when the dose remains within cert limits. 4. The diuretic action appears to owing to the potassium set free when ferrocyanide molecule condenses into fer cyanide.

Whether leprosy is contagious is a fact denied by many. But the weight of evide continually accumulating tends to prove t the disease is a communicable one. A c case has been reported by Dr. Forné, a m physician attached to the colonial serv While in the penal colony of New Caledo he observed that leprosy, hitherto confi to native Kanakas, was beginning to spr among the white race. On December 1889, there were four Europeans, all e victs or ex-convicts, infected with the d ease. The most characteristic instance the following: X., a Belgian by birth, w in 1874, at the age of 31, sentenced France to five years' hard labor, and tra ported to New Caledonia. In 1879, at t expiration of his time, he chose to rem in the colony; but it was only in 1881 th he took up his residence near a native tri strongly affected with leprosy, and had w them close and constant relations. In 18 the first lesions appeared, and soon spr over various parts of the body. The

in 1889, saw the patient suffering from rous bullæ and ulcers, leaving no doubt the nature of the affection, and the so that in a parcel of the ear-lobe, ex- with the patient's consent, quantities ansen's bacilli were found swarming all gh the tissue. The diagnosis was leprosy mixed anæsthesic and tuberculous char- . The case was undoubtedly one of gion, as the man, being a native of a ry where leprosy has been for centuries own, cannot be said to have inherited his parents any germs of the disease h overtook him afterwards.

. Hervieux, of the Academy of Medi- vaccination committee, has recommended vaccine, not as a substitute but as an al- ive for bovine virus. From his researches pears that the idea is not a new one, since ne virus was prescribed in 1803 by an ance of the king of Spain. But recent iments have shown goat vaccine to be, average, about as reliable as the one ly employed, both in the lymph and the state. Dr. Hervieux, who is a very ul and fair-minded man, has found the vaccine process to present the following ntages and disadvantages: To begin the first, while the goat offers equal se- y against syphilitic contagion, it is, un- the cow, completely tuberculosis-proof, important point. Besides, goats are er, more manageable, and less expen- than cows. When a heifer has to be in- ated, no less than three men are needed help the operator; with a goat, one is gh. Moreover, the hire and keep of the ller animal will cost a great deal less. the other hand, there are objections st nanny, the chief being that but few er kind are bred as compared to cows. that human virus is more and more re- ed, it would be easy, in case of a small- epidemic, to procure at once almost any ber of heifers to raise virus, while goats ld be altogether insufficient, the more so , owing to different size and anatomical pe, it takes from four to five goats to pro- e as much virus as one heifer. Thus it ld be out of the question to recommend exclusive use of goat vaccine, but for the ons given, especially the certainty of ding tuberculosis, the virus in many es is one that should not be neglected.

To speak of another sort of inoculation, e different in character though, trans- ed from animal to man, glanders have n proved by Dr. Nocard to be commu- nicable by simple contact with the skin. He has succeeded by anointments on the unbroken skin with glander discharge, to inoculate the disease to two guinea-pigs out of fifteen. A microscopical examination showed the bacilli to have penetrated the healthy skin through the hair-follicles to the lymphatic cells.

And, finally, while in the microbian kingdom, a work of Dr. Th. Guyot should be noticed. It is a good-sized book on arthritis, in which he has expounded the theory that the affection may be caused by a microbe. Although the bacillus has not been isolated, he contends all the lesions and symptoms are such as to render the theory, if not certain, at least most probable. His main object in publishing the work in question has been to call the attention of other observers to the question, so as to compare and complete experiments.

PARIS, May 21, 1890.

BERLIN.

(From our Special Correspondent.)

Scarcely had the members of the Medical Congress returned home from their trip on the blue Danube than they found already awaiting them the prospective pleasures of several important conventions here in their native land. Of these gatherings the one attracting most attention is that of the German physicians, because it is to be made busy with social festivities and preparations for the session of the Chamber of Physicians. The election to the membership of the latter has yet to take place this year, and the fight will be a hard one. Moreover, the sixteenth session of the German Congress of Public Hygiene occurs in September in Braunschweig, shortly before the meeting of the Society of German Naturalists and Physicians in Bremen. The International Medical Congress, which is to meet in Berlin about the 1st of August, has been for some time putting into commotion all the medical circles in Germany, especially in Berlin. A committee has been chosen to provide temporary quarters for the visiting physicians; furthermore, the committee of arrangements has been working with the greatest diligence to get everything into perfect readiness, so that the whole time during the Congress may be taken up with important matters. Virchow has just returned a few days ago from his Eastern tour, and, as such an event is always of vast interest to medical cir-

cles in Berlin, I feel that the work will now be carried on with renewed energy, as only two and a half months remain before our guests from all quarters of the globe will be with us. Since many medical corporations and the state, as well as the city and the organization committee, will propound difficult questions to the participants in the Congress, it is to be earnestly hoped that the visitors may succeed in getting a good picture of the life and vim of medical Germany.

In regard to the changes in the faculties of the German universities, we have to state that Instructor Hans Leo, who was hitherto an assistant of Professor Senator in the University Polyclinic, has been called to Bonn as special professor, to fill the chair made vacant by the resignation of Professor Friedrich Mueller, who, though but recently appointed assistant to Professor Gehardt, of Berlin, has lately been elected director of the Medical Polyclinic at Breslau. In the latter place Instructor Partsch has been elected special professor in the faculty of medicine.

In the last session of the Berlin Medical Society the communications from some speakers aroused considerable interest. Professor Gluck showed a female patient from whose right inguinal region he had removed a carcinoma about the size of one's fist. The wound healed under antiseptic precautions; the patient is now feeling perfectly well, able to work, and the function of the limb is preserved. Over six months have elapsed since the operation, and such results are seldom met with. During the operation several difficulties had to be overcome. The saphenous vein had to be tied close to its entrance into the common femoral, which was secured with a silk ligature, and healed without the entrance of any thrombi. Moreover, large pieces of flesh had to be removed from the pectineus and adductor muscles. (It is to be earnestly hoped that the patient will long survive this operation, and will continue to demonstrate the curability of cancer by radical operation.)

Professor Franckel showed a specimen that he had removed from a woman 27 years of age. A hard, osseous tumor had closed the right nostril entirely and protruded from the canal. Upon opening this with a chisel a quantity of pus was discovered and removed, after which a bony cavity, lined with a thin film of mucous membrane, could be seen. This shell of bone was fragile and easily taken out. The sac or pocket protruded from the nasal septum. The power of control over the cavity of the nare been gone for months. The growth been nourished by this large collecti pus.

In the same way Zeller showed some interesting specimens from the collecti Professor Sonnenburg. These were p tial calculi taken from a man 45 year He had been married twelve years, and vious to this time had had cystitis w stricture of the urethra, when a stone been passed during micturition. The ing phymosis was operated upon by ci cision and several stones removed, the l of which weighed eight and one-tenth g They were composed of carbonates of t kalies, triple phosphates, and calcium c nate, and are to be considered true ur calculi. (How he could have perform marital relations it is hard to imagine.)

Professor Schoeller read an essay on th ject of the operative treatment for catara means of iodine injections,—a subject which the doctor had already spoken some ago. He had treated in all twenty cases b method. From the patients recently ated upon, two are to be excepted, be in them a trial was made of the salicyl sodium 1 : 3, and in addition to these are three others in the treatment of whom operator resorted to the use of the solut the iodide of potassium, recommended Abbadie. Three cases in which the i tion of the iodide had been tried, failed account of hemorrhage. In three cas which the disease had existed for years, in which complications were present, were opportunities offered for only a p application of the method. Still it succe in broadening the field of vision in thes tients, and in one case markedly to imp the acuity of the sight. Sometimes the eration did less good or none at all. In teen patients the cataract returned in o instance; but in seven of them it was n much the second time in the field of d vision. The reason of this failure is t found in the too feeble reaction of the o upon the injection, on account of which bathing of the crystalline lens was not fectly performed. Eight cases are to be ported as having healed very satisfacto although in three of them some imperfect were left behind, which, however, did not stroy the power of vision. Moreover, o physicians who have since tried similar periments have obtained good results. these results are not constant, and so

n, at least, are to be improved upon, such he reaction of the organ upon the injec- of the tincture of iodine which is not stant, but varies in its intensity, being at time too strong and at another time too k. Any injury to the posterior capsule of ens is to be carefully avoided. Professor weigger, who has treated ten cases by this hod and arrived at no result, is at present osed to its use.

Finally, Professor Jul. Wolff spoke in glow- terms of the operation for cleft palate, ch he is now in the habit of performing eans of silken sutures following the bend he pharyngeo-palatal muscles, and with- stretching the throat. In ten cases he rted perfectly smooth union, and that, better than by the old method. With the nt patient, in whom there existed a ely-separated division in the palate on the side, the velum palati was secured poste- y by means of a suture, and in this way rtistically pleasing as well as functionally ect result was obtained.

the Congress for Nervous Diseases the tment by suspension for tabes dorsalis not mentioned with praise. The speaker, Rosenbaum, spoke of the results that had obtained by Professor Mendel in the r's treatment by suspension of this and r nervous diseases in the Polyclinic. The ous symptoms were markedly improved quite a number of cases, especially those the fleeting pains, ataxia, and the Rom- g reflex movements. The symptoms con- ted with the bladder and rectum im- ved, it is true; but this improvement ed only for a short while. The ocular ptoms were also ameliorated, and pro- ncedly so. In myelitis suspension showed results, and is never to be tried by the ient alone without skilled medical atten- n. Patients often make a mistake in this ard, particularly as no special skill seems essary for the successful carrying out of s method, and it is to this that we must er the unfortunate or serious results that e disseminated through medical literature arising from this mode of treatment, for the speakers agreed that with satisfactory ecautions and under medical attention this ethod of treatment is free from danger. e younger patients were more amenable the treatment than the older ones. Prob- y this depended upon the fact that in the ter the adhesions, resulting from previous acks of lepto- and pachy-meningitis, were rn asunder. At any rate, experience proves a hyperæmia of the parts concerned, and, therefore, a marked improvement in the various symptoms. As these patients were in the hands and power of the physician, no other treatment but that of suspension was tried. It is worth while to mention also their final conclusion in regard to this as well as to the other methods of treatment for tabes dorsalis, which was that it will always be impossible to treat satisfactorily all the various symptoms of this disease, which requires so much patience on the part of both the sufferer and physician, as well as extreme care and the purchasing of costly apparatus. The suggestion of it, however, exerts a great benefit over the minds of the patients, who, having grown hopeless in regard to their condition, become acquainted with a prospective balm for their woes, and willingly submit to the new treatment. In the debate all the speakers finally agreed that the treatment by suspension does not have any influence upon the organic process of the disease as such, and should not be resorted to with that idea. Moreover, that medical treatment is always to be used together with the suspension.

Contrary to the above experience, P. Guttmann has seen good effects following suspension in myelitis. He also treated patients with *lithiasis* by means of constant doses of antipyrin, both hypodermically and by the mouth, and completely cured them. Thus experience promises no more and no less by the treatment of tabes by suspension than it does by some of the other well known methods. Remak drew attention to the remarkably fickle course of tabes, which will sometimes get better without our attention, and at other times will seem to defy all our efforts towards its improvement. Leyden expressed himself as being wholly negative in regard to the subject to the matter under discussion. Mendel remarked that the common symptoms of tabes—viz., immobility of the pupil and lack of patella reflex—were not favorably influenced by the treatment; still, he advised trying it under necessary precautions and in suitable cases, as it was possible to ameliorate thereby, at least, some of the symptoms of the worn-out patients.

Notes and Queries.

ANY one interested in the sick-benefit, funeral-aid, and death-beneficiary associations of the United States can help make the statistics of their organizations for the

forthcoming census more complete and disseminate the knowledge of the good work they are doing by sending the names of such societies as they may know of, and the addresses of their principal officers, to MR. CHARLES A. JENNEY, Special Agent of the Eleventh Census, 58 William Street, New York City.

"CENSUS OF HALLUCINATIONS."

To the Editor of the THERAPEUTIC GAZETTE:

DEAR SIR:—May I ask for the publicity of your pages to aid me in procuring co-operation in a scientific investigation for which I am responsible? I refer to the "Census of Hallucinations," which was begun several years ago by the Society for Psychical Research, and of which the International Congress of Experimental Psychology at Paris last summer assumed the future responsibility, naming a committee in each country to carry on the work.

The object of the inquiry is twofold,—first, to get a mass of facts about hallucinations, which may serve as a basis for a scientific study of these phenomena; and, second, to ascertain approximately the *proportion of persons* who have had such experiences. Until the average frequency of hallucinations in the community is known, it can never be decided whether the so-called "veridical" hallucinations (visions or other "warnings" of the death, etc., of people at a distance), which are so frequently reported, are accidental coincidences or something more.

Some eight thousand or more persons in England, France, and the United States have already returned answers to the question which heads the census sheets, and which runs as follows:

"*Have you ever, when completely awake, had a vivid impression of seeing or being touched by a living being or inanimate object, or of hearing a voice, which impression, so far as you could discover, was not due to any external physical cause?*"

The Congress hopes that at its next meeting in England, in 1892, as many as fifty thousand answers may have been collected. It is obvious that for the purely statistical inquiry *the answer "No" is as important as the answer "Yes."*

I have been appointed to superintend the census in America, and I most earnestly bespeak the co-operation of any among your readers who may be actively interested in the subject. It is clear that very many volunteer canvassers will be needed to secure success. Each census blank contains instructions to the collector and places for twenty-five names, and special blanks for the "Yes" cases are furnished in addition. I shall be most happy to supply these blanks to any one who will be good enough to make application for them to

Yours truly,

PROFESSOR WILLIAM JAMES.

HARVARD UNIVERSITY, CAMBRIDGE, MASS.

THE TREATMENT OF WHOOPING-COUGH BY INHALATION OF SULPHUROUS ACID.

In the *Bulletin Général de Thérapeutique*, April, 1890, DR. WEISGERBER reports three cases of marked whooping-cough, which he treated by burning daily, in the morning and evening, one hundred and fifty grains of powdered sulphur, and subjecting the children for an hour, in the morning and evening, to the action of the sulphurous-acid fumes. The gases emanating from this amount of sulphur in a room about eighteen yards square are not sufficiently concentrated to produce any serious annoyance other than slight irritation in the nose and throat, and he has succeeded, as in other instances already alluded to in the GAZETTE, in producing most marked relief following the very first treatment.

A NEW REMEDY FOR HAY FEVER.

Regularly as the summer comes round, with its flowers and sweet-scented grasses, and the fatal *amari aliquid* which rises from these well-springs of odorous delight to vex the nostrils of the victims of hay fever, there is a corresponding efflorescence in the medical journals of more or less dainty therapeutical devices to rob the pollen of its sting. Many means of lessening the abnormal irritability of the conjunctiva and respiratory mucous membrane have been tried, and for the most part have been found wanting, and sufferers to whom experience has brought "disillusion" are fain to throw physic to the dogs and take refuge on barren mountain-tops till autumn brings surcease of sorrow. It is not every one, however, as the old proverb tells us, that can go to Corinth, and, moreover, those subject to hay fever are as eager as the Athenians of old to hear some new thing that may perchance mitigate, if not

their complaint. Some of our readers, re, may be glad to have their attention to a method of treatment which seems e at least the merit of novelty. DR. MALLERÉE, who looks upon the disease neurosis of nasal origin," the exciting of which is "erection" of the mucous rane set up by some irritant substance, e has succeeded in subduing the mor- ensitiveness of the parts by means of hes of carbonic-acid-gas applied to the or of the nose, at least three times a for a quarter of an hour at a time. In e cases this local medication is insuffi- , and the gas must be given by the rec- n 6-litre doses, morning and evening. Lamallerée states that he has "passed he intestine in less than ten minutes 10 to 14 litres of carbonic acid gas t the patient feeling the slightest colic tention." No other treatment what- is used. It must be confessed that Dr. Lamallerée speaks of this re- ble plan with all the enthusiasm of a erer, its results, even on his own show- o not seem to be particularly brilliant, it is just possible that many persons think the remedy worse than the dis- —*British Medical Journal*, May 10, 1890.

USES OF COCAINE IN SURGERY.

he graduation thesis of DR. J. BOUCHET aris, published in the *Gazette Médicale de is*, May 10, 1890, deals with the uses of ine in operative surgery. He calls at- on to the number of different usages, h have been frequently described, but h it may be worth while to recapitulate. n combined with chloroform inhalation, der to produce general narcosis, it facili- s the subsequent awakening and moder- reaction. Injected between the alveolus the tooth it suppresses pain in the ex- tion of the latter. It reduces suffering in s and obliteration of nasal polypi, while lly employed it affords great relief in an- and cystitis. It facilitates dilatation of urethra in cases of stricture, and injected o the bladder or into the urethra in gonor- a greatly relieves pain; further urethral ctions of cocaine facilitate the passing of catheter and dilatation of the canal, le under its influence lithotripsy may be formed under the most favorable condi- . Cocaine has also been used in the tment of hydrocele to suppress the pain which follows injections of iodine and in the operative cure of phimosis and paraphimosis.

Finally, its use permits of the cure of vaginismus, while its employment in ophthalmic surgery is of inestimable value, where the contraindications to its employment are almost confined to the existence of glaucoma. On the other hand, all these advantages are somewhat detracted from by the fact that cocaine, even in moderate doses, is sometimes poisonous, and it is thus necessary to test in advance the susceptibility of the patient by giving gradually-increasing doses, and to watch with the greatest care all subjects affected with cardiac or nervous diseases.

TO PREVENT DISCOLORATION IN BRUISES.

To prevent the blood from settling under a bruise, there is nothing to compare with the tincture or a strong infusion of capsicum annuum mixed with an equal bulk of mucilage of gum-arabic, and with the addition of a few drops of glycerin. This should be painted all over the surface with a camel's-hair pencil and allowed to dry on, a second or third coating being applied as soon as the first is dry. If done as soon as the injury is inflicted, this treatment will invariably prevent the blackening of the bruised tissue. The same remedy has no equal in rheumatic stiff neck.—*St. Louis Polyclinic.*

ETHOXYCAFFEINE.

Ethoxycaffeine, which some time since was strongly recommended, in doses of .25 gramme (4 grains), as a remedy for migraine, can, according to DR. THOMS, be readily prepared by treating caffeine with large excess of bromine, added gradually in small quantities, the mixture being kept cool, and then adding to an alcoholic solution of the resulting monobromcaffeine, freed from excess of bromine, metallic sodium in small fragments sufficient to combine with the bromine, and boiling. Upon concentration of the alcoholic solution the ethoxycaffeine separates in small white needles, that can be purified by recrystallization from alcohol or water (*Pharmaceutische Post*, April 13, p. 309). The melting-point of the crystals is 138° C., and Dr. Thoms recommends this as a means of distinguishing it from the much lower-priced caffeine, with which it might be adulterated. Another point

of difference is the behavior of the two bases towards caustic potash or soda solution. A solution of .1 gramme (1½ grains) of caffeine in 50 c.c. (1⅔ ounces) of boiling water is not rendered turbid upon the addition of potash solution, while from a similar solution of ethoxycaffeine the compound is almost completely precipitated.—*Pharmaceutical Journal and Transactions*, May 3, 1890.

RESORCIN FOR RODENT ULCER.

Dr. Chas. Szadek, in the *Satellite*, recommends resorcin for various forms of skin-diseases, particularly condyloma and verrucæ, in the form of ointment and powder. He reports a case of cure of rodent ulcer by using an ointment of resorcin and vaseline (twenty-five per cent.).

No organizations in the United States have multiplied more rapidly in the past ten years than the sick-benefit, funeral-aid, death-benefit, and other kindred societies.

As they are generally confined to those who are in the humbler walks of life, the good they have done is incalculable, carrying substantial aid to thousands of stricken families, and inspiring those who are fortunate enough in being members with a courage which might not exist in their hearts without them.

The members of these organizations will be glad to learn that Hon. Robert P. Porter, Superintendent of the Eleventh Census, will endeavor to secure the statistics of the noble work these associations are doing, and it is safe to say that no other branch of the census will be more interesting.

The business of gathering the data has be enplaced in charge of Mr. Charles A. Jenney, special agent of the insurance division, 58 William Street, New York City, and all associations throughout the United States, whether incorporated or private, should assist by sending to him the address of their principal officers.

THE EFFECTS OF ALKALIES ON ASSIMILATION.

At the Ninth Congress of Internal Medicine at Vienna (*British Medical Journal*, May 3, 1890) Dr. E. Stadelmann, of Dorpat, related experiments made to determine whether large doses of alkalies had a bad effect on assimilation. The alkalies were administered (1) in very large doses a for long periods. The experiments we ducted on the experimenters themsel conclusions drawn from experiments mals were sometimes misleading. Th bonate, bicarbonate, and citrate of were used. Almost all the normal c uents of the urine and the nitrogen fæces were taken into account. The ties of uric acid and ammonia in the were diminished after the administra the alkalies; the secretion of ammonia not, however, be altogether suppressed urea presented the most interesting anom In one of the experimenters the secre urea first became diminished, nitroge formed, but later on the conditions ch and the amount of the daily secretion varied greatly, on one occasion being normal and on another supernormal. average quantity, however, did not from the average normal standard. T trogen in the fæces increased, and wa sionally double the normal amount. uretic effect was noted. Increased ox of fat and augmented consumption of th the body after the use of alkalies we probable. Lime and magnesia were changed by alkalies with reference to secretion through the urine, and the was true of phosphoric and sulphuric which became rather diminished in qu after the use of alkalies, this being a worth particular attention. The experi ers thus succeeded in depriving the bo a part of its alkalies by the introducti acids, but they did not succeed in with ing inorganic acids from the body by troduction of alkalies. The carbonate dium was less well absorbed than the c The difference in the absorption of the compounds also proved that the citr sodium was not transformed into th bonate of sodium until it reached the and not in the intestines, as stated by heim. It was most improbable that t trate of sodium itself was excreted. digestive disturbances whatever, no injurious effect on the general con could be observed, even after doses grammes of the citrate of sodium, or amount of 600 grammes during the period of experimentation. The use ganic salts thus appeared to be much convenient than the carbonates, when desired, so to say, to alkalinize the They found that a considerable port the citrate of sodium must have been

d in the urine in the form of the carbonate dium. Further experiments were made n. Nissen and Mandelstamm, as to the nce of alkalies on the secretion of bile. experiments certainly proved that neither r, cold or warm, in large or in small tities, nor the alkalies, increased the s secretion. Small doses of alkalies lsbad salt), bicarbonate of sodium, sul- e of sodium, phosphate of sodium, ace- f potassium, tartrate of potassium, citrate tassium, carbonate of potassium, etc., did influence the quantity and composition of t all, whereas large doses of the same di- hed the secretion of bile. The secretion e coloring-matter of the bile, the bilious and fats, remained unchanged. The of using alkalies as cholagogues was, fore, erroneous. The value of the alka- consisted in the fact that they had a able influence on the catarrhal condi- of the intestines, the bile-ducts, and the bladder, and that they diminished bilious tion. As the alkalies undoubtedly in- ed the alkalinity of the blood, the bile ted under their influence also had a ger alkaline character, which was able dissolve biliary concretions and to dimin- biliary calculi, so that these could pass ugh the bile-duct.

E PHARMACOLOGICAL PROPERTIES OF COLCHICINE.

Experiments have recently been made in pharmacological laboratory of Stras- g by Dr. Jacobi, which have led the hor to the following conclusions (*Gazette dicale de Paris*, April 6, 1890):

1. Crystallized colchicine, prepared ac- rding to the formula of the French chem- Houde, is identical with colchicine studied Germany by Zeissl.

2. Under the influence of nascent oxygen is transformed into an oxidation product own under the name of oxydicolchicine.

3. Oxydicolchicine is likewise formed in e animal economy under the influence of e vital activity of the tissues.

4. Perfectly pure colchicine only produces eble physiological effects on the frog.

5. On the contrary, oxydicolchicine, in ses of ⅙ grain, produces in the frog effects alogous to veratrine.

6. In warm-blooded animals the two sub- nces produce similar effects both in point view of intensity and character of action. There is excitation of the nervous apparatus of the intestinal walls which presides over peristaltic movements of the bowels. Disturbance of sensibility and modification of muscular power follow this action, while finally, as the result of progressive paralysis of the motor centres in the spinal cord and medulla oblongata, the animal finally perishes from the arrest of the functions of the respiratory centre.

CODEINE IN DISEASES OF WOMEN.

Following Lauder-Brunton's recommendation of codeine (*British Medical Journal*, January 9, 1888) for "pains in the bowels and lower part of the abdomen," Freund has made observations as to its usefulness in diseases of women. He finds that while in pain which proceeds from the uterus, codeia gives temporary relief; in exudations of the pelvic peritoneum and connective tissue and affections of the tubes it is useless. On the other hand, in ovarian troubles Freund finds it to be of great value. He gives three times daily 1 pill containing ½ grain of codeine. This dose promptly relieves all ovarian pain, whether of inflammatory origin or so-called simple neuralgia. The action of codeine is a purely local one. It does not stupify, above all things, nor does it interfere with the appetite or regular movement of the bowels.—*Medical Chronicle*, May, 1890.

PYOKTANIN—A NEW ANTISEPTIC.

Professor Stilling, who, with Dr. Wortmann, in Strasburg, has recently been subjecting aniline colors to extended study, has found that of the many of these colors which in gelatin cultures possess marked preventive influences on the development of bacteria, but few of them are suitable for use in medical practice (*Oestereich Zeit. f. Pharm.*). They nearly all, however, are extremely active antiseptics, and are especially suited for the treatment of suppurative wounds. Of these, pyoktanin (deriving its name from the two words meaning to destroy pus) is an antiseptic, which, according to Professor Stilling, is entirely free from unfavorable action, and is absolutely inodorous, while as a destroyer of bacteria in the living organism it is far more active than sublimate. The principal objection to its use is in the stain which it produces, although the color is readily washed off by means of soap and alcohol.

Two forms of pyoktanin occur in the market,—a blue and a yellow. Of these, the former seems specially designed for surgical employment, the latter for use in ophthalmic surgery. This substance is readily soluble in water and alcohol, in which the blue pyoktanin forms a beautiful blue solution. For employment it may be used in a two per cent. powder or .05 per cent. watery solution.

ANOTHER REMEDY FOR SWEATING FEET.

LEGOUX (*Les Nouveaux Remèdes*) recommends the following:

℞ Perchloride of iron, ʒiii;
Glycerin, ʒi;
Essence of bergamot, ʒii. Mix.
Apply with a pencil or swab.

—*National Druggist*, May, 1890.

TREATMENT OF THROAT-AFFECTIONS.

According to the Paris correspondent of the *British Medical Journal* for May 3, 1890, M. RUAULT has treated several cases of tonsillitis with naphthol; where sloughing seemed inevitable, doses of naphthol changed the aspect of the affected tissues, and suppuration was presented. M. Gouguenheim, at the recent Congress of Laryngology, mentioned several cases of pharyngitis successfully treated with phenol salicylate. Salol, he says, acts favorably on all forms of sore throat; pain and difficulty of swallowing are quickly relieved; the temperature is lowered; and, in most cases, the illness is cut short. M. Gouguenheim gives not less than 4 grammes (60 grains).

CANTHARIDES PLASTER.

It has recently been stated that under proper precautions a beautiful crop of micrococcus pyogenes aureus, or staphylococcus pyogenes aureus of Rosenbach, may be procured in a tube of sterilized nutrient fluid inoculated with material drawn from a cantharides plaster. As a result, a general warning was given to wholesale chemists on the importance of taking heed "where they get their tallow to prepare fly-blisters with." This serious warning, although undoubtedly well meant, appears to have been based upon insufficient consideration of the problem. Another correspondent very justly remarks that, according to the British Pharmacopœia, cantharides plaster is directed be prepared not with tallow, but with low wax, prepared suet, prepared lard, resin, and that these substances are mitted to considerable heat, whereas cantharides powder is added, with stirr while the mixture cools. Still, in spite this inaccuracy, it is well known that troub some pustulation frequently follows the ap cation of cantharides plaster, and the pres of the micrococcus is extremely suggest whatever its ultimate source may be found be. The question is too important to be lowed to resolve itself into an attack u wholesale chemists; indeed, this would manifestly unjust upon the very scanty supplied. Before those responsible for al ations of the British Pharmacopœia in their promised report, it is to be hoped t they will decide whether it is ever desira to employ powdered cantharides in pre ence to liquid preparations.—*Lancet*, May 1890.

FOR PERSISTENT COUGHS.

GUÉNEAU DE MUSSY prescribes the follo ing pill:

℞ Purified tar, gr. xv;
Dover's powder, gr. xxii;
Benzoin, q.s.

Make into a mass, and divide into 20 pills, of wh 1 may be given several times a day.

This pill is useful in chronic catarr bronchitis, with emphysema, or in any c where there is a persistent and tenacio cough. We would remind the reader that tendency will be to constipate the bowels, a that this must be looked after in using th pill. Otherwise it is excellent.—*Nationa Druggist*, May, 1890.

SALICYLATE OF MERCURY IN THE TREATMENT OF SYPHILIS.

In the selection of a mercurial preparati in the treatment of syphilis the choice na urally falls upon such a one as will act suf ciently energetically as to cause prom action without unduly irritating the gastr intestinal tract or affecting the economy i general. In a paper upon the clinical trea ment of syphilis, published in the *Journal Cutaneous and Genito-Urinary Diseases* fo May, 1890, by DR. A. F. BUCHLER, the auth states that, in an experience with thirty-f cases of syphilis treated with this compou

believes that the salicylate of mercury ers these requirements in a very high ree.

he ordinary dose prescribed was ½ of a n, in pill or tablet form, three times a ; this caused not only a rapid involution he cutaneous manifestations, but also in a degree those of the mucous membranes. one case of a relapsing circinate papu- yphilide of the face and forearm the lesion ely disappeared after the patient had n forty-five pills; in a case of papular hilide of the palms, occurring sixteen ths after infection, an equally good result obtained from fifty pills.

nly in three instances was the course of tment attended by symptoms of mercurial- In one case a slight stomatitis was ob- ed after the patient had taken twenty , and in two diarrhœa supervened, re- tively, after thirty-six and fifty pills.

f comparisons are admissible, it would ap- r that in its therapeutic action the sali- late bears the closest analogy to the protio- de of mercury, over which, however, it parently possesses the advantage of being ter tolerated by the gastro-intestinal tract. the other hand, it appears to be slower an the latter salt in reducing enlargements the lymphatic glands.

Yet, on the enlargement of a physiologi- lly closely allied organ—the spleen—it ex- ted a very favorable action. In five obser- tions, where, with the onset of secondary mptoms, percussion showed an increased a of splenic dulness, a perceptible diminu- n in size was noted after the initiation of e course of treatment with salicylate of ercury.

THE TREATMENT OF ALCOHOLISM BY STRYCHNINE.

Dr. Pombrak, writing in the *Meditsinskoĭ Obozrênie* on alcoholism, describes seven ases treated by hypodermic injections of trychnine,—a method that seems especially favor in Russia, where, however, it must e remembered, drunkenness presents, as a ule, forms somewhat different from those prevalent in this country. Dr. Pombrak found strychnine a very valuable remedy, both in cases of chronic alcoholism and in those of dipsomania, not merely curing e attacks, but abolishing the desire for ink. Even attacks of delirium tremens fluenced beneficially. The treatment must be carried out in a systematic manner, and must frequently be kept up for a very considerable period. As to the dose, Dr. Pombrak, in cases of moderate severity, commenced with $\frac{1}{30}$ of a grain; in more serious ones, with $\frac{1}{15}$. He found that, while the treatment was being carried out, there was no necessity to order the patients to abstain from the use of spirits, as they always did so of their own accord.—*Lancet*, May 3, 1890.

DYSPEPSIA.

Dujardin-Beaumetz offers the following powder as being very useful:

℞ Maltini,
Pulv. sodii bicarb., āā 1 gramme (gr. xv);
Magnesii calcinat., 2 grammes (gr. xxx);
Pulv. sacchari albi, 10 grammes (ʒiiss).
Misce bene et in pulv. no. xx. div.
Sig.—A powder after each meal.

—*Satellite*, April, 1890.

POISONING BY ANTIFEBRIN.

Dr. J. Vierhuff, of Subbath, in Courland, communicates to the *St. Petersburger Medicinische Wochenschrift* the notes of a case of antifebrin-poisoning, which show what dangers people run who dose themselves with drugs of this class. A healthy young married woman, who had been in the habit of taking antifebrin for headache, feeling the pain come on early one morning last summer took, fasting, about a teaspoonful of the drug in some water. In about ten minutes, the headache not being relieved, she repeated the dose, which her husband remarked might prove dangerous. She consequently took a glass of milk and some alum-water in order to produce vomiting, which she succeeded in doing, but immediately afterwards giddiness, singing in the ears, throbbing in the temples, and a dull pain in the head, together with a feeling of weakness, came on, and the face assumed a livid hue. When seen four hours after the drug had been taken, the face was a livid color, the lips blue, the pupils contracted, but the heart, temperature, and mental condition were normal. An aperient and a stimulant were ordered. Shortly afterwards the patient became suddenly collapsed, the pulse could not be counted, and the breathing was

very shallow; in fact, the woman appeared to be dying. The soles of the feet were brushed, vinegar was rubbed on the face, and cold water sprinkled over the face and chest; also a mixture of camphorated oil and ether was ordered for injecting subcutaneously. While this was being procured, several syringefuls of dilute spirit, which was all that could be obtained, were injected, and the patient was brought round, though for three hours and a half her condition appeared hopeless. Then, after recovering somewhat, collapse again came on, and recourse was had to an intravenous injection of a solution of common salt, which appeared to act most beneficially. In about fourteen hours after the drug had been taken the patient was out of danger. After that she continued to improve, though she complained of debility and pain in the limbs for a week. Dr. Vierhuff remarks that the serious symptoms were probably due largely to the patient's taking the antifebrin on an empty stomach.—*Lancet*, May 24, 1890.

THE GASTRIC FUNCTIONS IN DIABETES.

At the Ninth Congress of Internal Medicine at Vienna (*British Medical Journal*, May 3, 1890) Dr. Gans, of Carlsbad, said that last winter he carried out a number of experiments, in the laboratory of Boas, on the gastric functions in diabetes mellitus. The cases were ten in number. The contents of the stomach were withdrawn with a suction-pipe, after Ewald's *probefrühstück* had been taken, and were submitted to examination for total acidity, hydrochloric acid, lactic acid, diacetacetic acid, pepsin, ferments, etc. The acidity of the urine was also tested. The results were as follows: 1. The gastric secretion in diabetic patients varies greatly; normal conditions, hypersecretion, and total absence of hydrochloric acid were met with in different patients, and even in the same patient great differences in the secretion of HCl were met with. 2. The motor function of the stomach was quite normal in all the cases examined. 3. No relation was found between the function of the stomach and the percentage of sugar in the urine or the severity and duration of the disease. The fact already known empirically—namely, that in respect of diet each case of diabetes must be treated by itself—was thus for the first time proved experimentally to be correct.

THE COLD BATH IN SCARLET FEVER.

The good effect of cold immersion in severe scarlet fever was well illustrated in a case related by M. Dieulafoy at a recent meeting of the Paris Hospitals Medical Society (*Bull. et Mém. Soc. Méd. des Hôpitaux*, No. 15). The patient, a girl 16 years of age, was, on the sixth day of the fever, attacked by marked nervous symptoms, excitement, insomnia, suppression of urine, pulse from 120 to 150, and very high temperature. On the eighth day her condition was very grave, the eruption had disappeared, the temperature was 40.9° C. (105.6° F.), pulse irregular and intermittent, and the prostration extreme. In spite of the fact that she was menstruating, he advised the cold bath, and after some delay the friends of the patient permitted the measure. She was placed in a bath at 24° C. (75° F.), which caused severe shivering, cyanosis, and coldness of the extremities. But the pulse-rate fell from 150 to 100, and the delirium ceased. At the end of fifteen minutes she was removed from the bath, which was repeated three times during the night, at higher temperature. This treatment was continued up to the eleventh day, when the body temperature became normal. M. Dieulafoy advocated the bath in all malignant forms of fever, and its good effects in scarlet fever were endorsed by MM. Johel-Renoy and Duponchel, who had obtained similar good results. Dr. Huchard advised caffeine injections for the collapse.—*Lancet*, May 24, 1890.

IODOFORM EMULSION IN COLD ABSCESS.

Dr. Jasinski, of Cracow, has treated eighty-six cases of cold abscess by means of injections through a trocar of iodoform emulsion with encouraging results. A certain number were cured by a single injection, others after two or three injections. In eleven cases after the injection the abscess broke, a large quantity of pus mixed with iodoform being discharged. These were all cured without any further surgical interference. In nineteen cases an incision had to be made; the cavity was then washed out with carbolized water, iodoform emulsion injected, and the wound sewed up after a drainage-tube had been inserted. In some of these cases the injection had to be repeated several times. Though 180 grammes of a ten per cent. emulsion were injected at once, no toxic symptoms were ever observed.—*Lancet*, May 24, 1890.

—THE—

Therapeutic Gazette.

Whole Series, Vol. XIV. | DETROIT, MICH., PHILADELPHIA, PA., } July 15, 1890. | Third Series, Vol. VI. No. 7.

CONTENTS.

Original Communications.

PAGE

New Therapeutic Agencies. By Professor Dujardin-Beaumetz..... 433
Treatment of the Septic Accidents of the Puerperal State. By E. P. Hurd, M.D..... 439
Notes on Euphorbia Pilulifera. By Rosecrans Workman, M.D..... 449
Toxic Effects following the Application of Emplastrum Cantharidis. By Frank C. Bressler, M.D..... 450
Cascara in Syphilitic Ulcerations. By C. H. Haines, A.M., M.D..... 451
Constipation: Its Nature and Treatment. By C. L. Dodge, M.D..... 452

Leading Articles.

The Narcotic Action of Codeine..... 457
Mental Overwork in Modern Life..... 459
The Alkaline Cachexia; Treatment of Pseudo-Gastralgia due to Excessive (Hydrochloric) Acidity by Large Doses of Alkalies..... 460
Pilocarpine in Chronic Articular Rheumatism..... 461
The Prevention of the Toxic Effects of Cocaine..... 461

Reports on Therapeutic Progress.

The Cortical Motor Centre of the Larynx..... 456
Cubebic Acid in Gonorrhœa..... 456
Diagnosis and Treatment of Metrorrhagia..... 462

PAGE

The Antithermic Properties of Hydrochinone..... 464
The Treatment of Epilepsy with Biborate of Sodium..... 466
The Treatment of Acute Gonorrhœa..... 468
Croton Oil..... 469
The Properties of Fluoride of Sodium.. 469
The Physiological Action of Potassium Ferrocyanide..... 470
Rhus Aromatica in Enuresis..... 471
Superficial Suturing of Wounds..... 471
Ectopic Gestation, especially with Reference to Diagnosis and Therapeutics 472
The Treatment of Acute and Gonorrhœal Rheumatism with Phenacetin in Large Doses..... 474
The Therapeutic Power of Anemonine 475
The Pharmacological Properties of Ulex Europæus..... 475
What can be expected from Local Treatment in Hay Fever and Paroxysmal Sneezing?..... 476
Inhalations of Hydrofluoric Acid..... 477
Treatment of Phthisis by Inhalation of Superheated Air..... 477
Pulsation in the Uvula as a Sign of Aortic Insufficiency..... 478
Cold Baths in Measles..... 479
The Mode of Administration of Cardiac Remedies..... 479
Calomel as a Diuretic..... 480
A New Disinfectant..... 480
The Action of Gelsemium in some Local Spasms and Neuralgias..... 480
The Albuminuria of Opium-Eaters..... 482
Diagnosis of Gonorrhœa in Women..... 482
Hydrastine, Berberine, and other Derivatives of Hydrastis Canadensis..... 483
Abortive Treatment of Gonorrhœa..... 484
The Active Principle of Jequirity..... 485
Santonin and Castor Oil..... 485
Inflammation of Bones of Typhoid Origin..... 485
The Successful Treatment of Chronic Purulent Empyema by Means of Injections of Corrosive Sublimate..... 486
Management of Human Breast-Milk in Cases of Difficult Infantile Digestion 486
The Chemistry of Gout..... 487

PAGE

Syncope from Chloroform..... 489
The Action of Strophanthus..... 489
The Effects of Diuretics..... 490
Mercurial Poisoning..... 490

Reviews..... 491

Correspondence.

Berlin Letter..... 492
London Letter..... 494

Notes and Queries.

The Last of Orexin..... 495
Peptones of Meat..... 496
Poisonous and Defensive Albumoses..... 496
Anemonine..... 498
A Case of Bilio-Bronchial Fistula..... 498
Antipyrin and Carbolic Acid..... 499
Acetic Acid in Epithelioma..... 499
The Treatment of a Red Nose..... 499
The Therapeutic Employment of Armeria Vulgaris..... 499
Salol in Diseases of the Genito-Urinary System..... 499
Sodium Iodide..... 499
Changes in Faculty..... 500
Bisulphide of Carbon in Dysentery..... 500
The Nature of "Nona"..... 500
Antipyrin and its Incompatibles..... 500
Butyl-Chloral in Neuralgias of the Trigeminal..... 502
Abuse of Purgatives..... 502
Diuretic Effects of Grapes..... 503
Substitutes for Iodoform..... 503
Local Anæsthesia..... 503
Morphine as an Antidote to Atropine.... 503
Is Removal of the Tonsils Dangerous? 504
Menthol in the Hyperemesis of Pregnancy..... 504
Fluoroform..... 504

Original Communications.

*NEW THERAPEUTIC AGENCIES.**

LECTURE VI.—ON RENAL INSUFFICIENCY AND ITS TREATMENT.†

BY PROFESSOR DUJARDIN-BEAUMETZ,‡ PARIS, FRANCE.

GENTLEMEN:—No study is more interesting than that of the urine from the point of view of the diagnosis of diseases and the therapeutic consequences that have been deduced therefrom. That would be an interesting chapter in the annals of medicine which would give this history of urology from the beginning.

It was in the Middle Ages that urology attracted the most attention from the medical profession and the laity. The "Chemiatry" which then directed medical studies favored this tendency, and there was a class of physicians called *urinary doctors* who pretended to base on the examination of the urine alone the diagnosis of the disease and the indications for treatment. Zimmermann, in his "Treatise on Experience," tells us that the people of that age demanded of the physician that without regard to other signs he

* A second series of "New Medications," published in 1887.

† From advance sheets, revised by the author (translated by E. P. Hurd, M.D.). Lectures delivered in Cochin Hospital, Paris, France.

‡ Member of the Academy of Medicine, Physician to the Cochin Hospital, Paris, France.

should read in the urine all the history of a disease and the constitution of the patient. The Dutch school of painting has commemorated this feature of the times, and Gerard Dow has transmitted to posterity this tendency in his masterpiece, the "dropsical woman," which graces the Museum of the Louvre.

The alchemists emulously sought in the urine for the principal elements of the philosopher's stone, and the discovery of phosphorus in urinary sediment by Brandt, of Hamburg, in 1669, gave a new impetus to these researches. Then, to this exaggerated enthusiasm of the times succeeded a contemptuous neglect, and physicians of the following generations completely abandoned this department of medical inquiry.

But with the progress of biological chemistry, this question of the alterations of the urine has become more important than ever before, and we now find that it is very difficult to do full justice to a patient and institute a proper treatment without a preliminary analysis of the urine.

The ancients had for their guide in the examination of the urine only the physical signs furnished by that fluid; they examined with care the color, the deposits, and the modifications which the renal secretion presented. This examination, which was of course very superficial, necessarily furnished quite uncertain indications, and, in order that you may judge of this for yourselves, I must refer you to a curious book published by Davach de la Rivière in 1696, under the title of "Mirror of the Urine," a treatise which may be considered as a type of works of this kind.

I must remark here that the first printed works on medical subjects were such as pertained to the examination of the urine. Thus it is that, in 1483, Egidius published his verses on the urine; Bernard de Gordon, in 1484, another work concerning urine; and you will find, in 1489, 1515, 1524, 1541, and 1543, writings on the *urinarium judicis* of Montagnana, Janbert, Vala, etc. But to return to Davach de la Rivière, and to show you how inconsequent and nonsensical was the language of physicians on this subject, I will cite a passage on the urine of women.

"The urine of women who are not pregnant is of a yellowish color approaching to whiteness, with a certain turbidity and thickness which is very marked. It borders on whiteness because of the cold and phlegmatic temperament of the sex. The urine is heavy and turbid because phlegmatic imp abound in these patients, and easily vent by the kidneys."

I will not cite any more of this no for you realize already how obscure w the data furnished by ancient urology, hasten to more modern times.

To day it is with the greatest care chemists perform urinary analysis, and in our power to obtain a complete estim the different elements which constitute urine. It has even been demonstrated clusively that the quantity of the urine only a secondary *rôle* in the phenome renal insufficiency, for what it is import know in the urine is not so much the as the solid materials which it contains in these solid matters that we find a *débris* of the organic combustions and products of disassimilation, *débris* and ucts which, if retained in the economy casion poisoning.

I shall not enter into the detail of a organic substances contained in the You have only to refer to the list publi by Gautrelet, to see that their number less than thirty-five.*

I add that there have also been fou the urine organic alkaloids and micr There is, then, a capital interest in kno the amount of solid matters contained urine. To ascertain this, there are se methods: Some are very thorough, and long to the domain of pure chemistry, you will find a description of them in all treatises on Urinology, and, in particul the excellent manual of Yvon;† the othe empirical, but are sufficiently exact for tical purposes.

The most simple method consists in plying the last two figures of the density b coefficient 2.33, and you have thus almo precise figure of the solid materials cont in a litre of urine. In order to have th the solid materials voided in twenty hours, you will make use of the follo equation:

$$P = \frac{D \times a \times V}{1000}$$

P represents the weight of the solid rial; D, the last two figures of the sp gravity of the urine; V, the volume, a the constant coefficient 2.33.

* Gautrelet, "Urine, Deposits, Sediments, Ca Paris, 1889.

† Yvon, "Clinical Manual of Urinary Anal Paris, 1889.

bus, for example, the urine of your patient
a density of 1.016, and the patient has
ed one thousand five hundred grammes of
; you will thus be able at once to obtain
gure of 55.92 grammes, representing the
nt of solid materials contained in this
e.

s for the chemical examination of these
l materials, without entering into those
se analyses which belong to the labora-
, you can have an approximate idea by
nating the urea. You know that we are
ossession of very rapid processes, which
le us to make this volumetric analysis at
by employing hypobromite of sodium.
most handy apparatus to use in clinical
tice is that of Thierry.

ith these three elements—the total quan-
of nitrogen in the urine, the amount of
material, the density—you have gener-
sufficient data to know if the urine which
have before you is sufficient or insuffi-
t.

s for the albumen, which formerly had a
of so much consequence in urology, it
be confessed that its *rôle* has to-day lost
in importance: for the proportion of
men may vary considerably without the
of the patient being materially better or
thereby, and we may even say that those
are the most grave where the albumen is
rcely appreciable quantities, while, on the
hand, a person may be in a fair state of
h with considerable albumen in his urine,
rts per 1000, and even more.

he conception of Bright's disease has, in
much varied. During the first few years
Bright had communicated the results of
researches, it was thought that all the mani-
tions of this disease were only states more
ess advanced of one and the same renal
n. This was the doctrine of unicity. It
defended by Rilliet and Frerichs. Then
omo-pathological studies underwent greater
ection, and pathologists attributed to each
al alteration of the kidney a distinct mor-
entity.

Lastly, in a third period quite recent, char-
erized by the labors of Cornil and Brault,
thologists have come back to the unicity of
lesions; some of these are of inflammatory
in and constitute the nephrites properly
called; the others are the systematized
phrites, and correspond to the arterio-
erous alterations of the kidney. Moreover,
minating all the contention, we must place
two great theories of albuminuria, humoral
renal. In the one, the lesions of the blood are primary; this is the theory of Semmola; in the other, on the contrary, it is the alterations of the renal parenchyma which precede the symptoms of albuminuria.

However this may be, do not attach a great importance to the quantity of albumen in the urine, but rather devote your whole attention to the proportion of solid materials and the presence of the toxines contained in the urine.

When the solid materials are in too little quantity, medical help is required, and there are several ways in which you can extend this help. Already, in a previous article, I have set forth the principal points of this important question * in therapeutics, and I return to the subject to-day to complete the indications which I have there given.

In cases of renal insufficiency there are two great indications to fulfil,—on the one hand, to favor as much as possible the elimination of the toxines accumulated in the economy; and, on the other, to reduce to a minimum the figure of the toxines introduced by the food or resulting from the processes of assimilation or disassimilation.

To meet the first indication, we make use of purgatives, sudorifics, and diuretics,—that is to say, we apply to all the emunctories for the elimination of the solid materials of the urine. As for diuretics, medical authorities have long disputed as to whether in cases of chronic nephritis it were wise to employ this group of medicines.

It was feared that the exaggerated work imposed on the kidneys might augment the congestion, and for this very reason aggravate the disease. These fears were rather theoretical than practical, and to-day everybody seems agreed as to the advisability of the employment of diuretics.

It is to a special group of medicaments to which we give the name of *tensor diuretics*—that is to say, substances promoting diuresis by augmenting the arterial tension—that we should make application. At the head of these diuretics we should place digitalis and digitaline.

Of late years, this discussion of digitalis and the digitalines has been opened up anew. While Huchard and Potain have maintained that, from a diuretic point of view, digitaline gives the same effects as digitalis, others (and I am of the number) affirm the superiority of digitalis over digitaline.

My laboratory chief, Bardet, in his excel-

* *Bull. de Thér.*, t. cxvi. p. 2.

lent memoir on the digitalines, has shown us that under this name there are in commerce two products absolutely different, the one soluble in water, which is the German *digitaline*, or *digitaleine*, the other insoluble in water but soluble in chloroform, namely, the French *digitaline*. Arnaud has put in clear light this fact, that the crystallized French digitaline may serve as a type for the study of digitaline.

The difference between these two products is very great, and as it is still difficult for us to know which digitaline the druggist possesses to whom our prescriptions may be carried, I think that, till this question be fully settled, it will be wise to stick to the preparations of digitalis, and, in particular, the tincture, the infusion, and the maceration, the latter always seeming to bear off the palm. If, however, you wish to employ digitaline, it is Potain's solution which you should order; this is a solution made with water, alcohol, and glycerin, and containing one milligramme of the crystalline digitaline of the Codex per cubic centimetre; and this cubic centimetre should give, as estimated by the officinal dropping-tube, fifty drops.

In your prescriptions, when you employ digitaline, always have care to add "the digitaline of the Codex," and to specify whether it be amorphous or crystallized; it is the latter to which you should give the preference. It is necessary to be very prudent in the employ of this crystallized digitaline, and to give only a quarter to a half milligramme, repeating the doses slowly and cautiously, so as to attain the amount of one milligramme ($\frac{1}{64}$ grain) in the twenty-four hours.

By the side of digitalis and the digitalines, and almost on a par with them, I would place strophanthus, which has the advantage of producing an immediate action, while it takes two or three days for the effects of digitalis and digitaline to be manifested. I do not intend to go much into this subject of strophanthus to-day, for I propose soon to devote an entire lecture to the study of the tonics of the heart. Some have pretended that strophanthus causes nephritis. I have never seen anything in its action to bear out this view; and I have always derived certain benefits from strophanthus in cases of urinary insufficiency, whenever the alterations of the kidneys were not too great; for it is important that you should remember that, in order that diuretics may act, there should be portions of the kidney that are healthy; and, however powerful a tensor diuretic may be supposed to be, it is incapable of producing its effects if the heart be completely sclerous, or the kidney completely altered.

Sparteine deserves only a secondary place, and the same may be said of adonis and convallaria. But there is a medicament which merits a preponderant place, namely, caffeine. This substance presents the great advantage of being suitable for administration in hypodermic injections.

You may use the following formula:

℞ Pure caffeine,
Benzoate of sodium, āā 2 grammes (ʒss);
Boiled water, 6 grammes (ʒiss.) M.

Inject a whole syringeful of this solution in a fleshy part of the body, and repeat it two or three times a day. By the side of caffeine should be placed theobromine; you know the many points of contact which exist between the active principle of coffee and that of cocoa. If we may trust the researches of Stricker, caffeine is nothing but methyltheobromine. Fischer, on the other hand, maintains that theobromine is nothing but bimethylxanthine. According to experiments made by Gram, theobromine has an intense diuretic action; he employs the salicylate of theobromine in the dose of 6 grammes (90 grains) a day.* Germain Sée, who has claimed the priority in researches on the diuretic action of theobromine, denies the possibility of the solubility of theobromine in salicylic acid.† I am resuming my studies on the diuretic action of the xanthine series; these researches are to serve as the bases of the thesis of one of my pupils, Mlle. Pomerantz; I shall then be better able to give my opinion on the diuretic action of the active principle of cocoa. But I am prepared to-day to speak to you of the diuretic effects of a substance introduced into therapeutics by Heckel and Schlagdenhaufen, namely, the kola nut. One of my pupils, Dr. Monnet, has devoted his graduating thesis to the properties of this nut, and we have shown its happy influence in the treatment of cardiac affections and chronic diarrhœas.‡ My first researches led me to doubt the diuretic qualities of kola; to-day I believe that the nut of *Sterculia acuminata* possesses undoubted diuretic vir-

* Gram, "Clinical Researches on the Diuretic Action of Theobromine" (*Therapeutische Monatshefte*, 1890, No. 1, and *Bull. de Thér.*, t. cxviii. p. 283, 1890.

† G. Sée, "On the Diuretic Action of Theobromine" (*Médecine Moderne*).

‡ Monnet, "Kola, a Physiological and Therapeutical Study" (THERAPEUTIC GAZETTE, 1885, p. 223), *Thèse de Paris*, 1884.

, which it owes to the caffeine and theo-
ine which it contains. We may utilize
infusion of torrefied kola, which is pre-
d like coffee, or the tincture and fluid
act; the former is given in dessertspoon-
the latter in teaspoonful, doses.

To these medicaments, the diuretics, we
t add an entire group of substances which
ong to dietetics,—the lactoses and the
coses.

Since Professor G. Sée repeated, though
a different form, the experiments made, in
1, by Richet and Moutard-Martin, which
wed the evident action of lactose and glu-
e as diuretics, this question of the sugars
been the subject of new researches which
ve made in my service, and which you
find recorded in the thesis of one of my
ils, Sophie Meilach.*

The experimental researches of Moutard-
rtin and of Charles Richet on polyuria
of exceeding interest, and it is a pity that
y passed almost unnoticed at the time of
r publication.†

These writers experimented on curarized
chloroformed animals whose ureters were
posed to view and cut. They reckoned
quantity of urine excreted in a given
e, then introduced directly into the blood
substance to be experimented with.

In this connection these experiments con-
ute a very serious argument for those who
h me maintain that the method of intra-
nous injections is a bad method for judg-
of the therapeutic value of a medicinal
bstance. In fact, the first attempt of these
perimenters was to estimate the *rôle* of
ters as a diuretic. From a clinical point
view, it is indisputable that water is one of
r best diuretics; now, from the stand-
oint of intravenous injections, water is not
ly not a diuretic, but it is anuric, and com-
etely suppresses the secretion of urine.

The sugars, whether we employ glucose or
ctose, are, on the contrary, according to the
periments of Martin and Richet, the most
werful diuretics, and this in such a propor-
on that if we represent by 1 the quantity of
ormal urine eliminated in a given time, that
oduced by sugar introduced into the veins
would be represented by the figure 40 for the
me space of time. The urine thus obtained
always contains sugar.

Experiments on patients with glucose were made by Duplaix, at Tenon Hospital, in 1879, and they gave favorable results. All these facts seem to have been forgotten when Professor G. Sée made, on June 11, 1889, a communication on lactose as a diuretic.‡ In support of his position, he cited twenty-five cases of renal insufficiency from multiple causes, where sugar of milk, administered in the dose of 100 grammes dissolved in two litres of water per diem, had produced remarkable effects. It has been my belief that all the sugars must have the same property, and instead of lactose I have employed glucose, and have obtained the same effects, which were perhaps even more marked than with lactose. This is easily explained, as, from experiments made by Dastre, on the one hand, and by Bourquelot and Trosier on the other, it results that lactose, when administered by mouth, is transformed into glucose and eliminated in this form.

I at first thought that it was the presence of glucose in the urine which explained the diuretic action of these substances, and that this temporary glycosuria was the cause of the polyuria. This is not the case, for in the healthy man, not predisposed to diabetes, and in animals, as the hare, one has to give enormous doses of glucose to produce glycosuria. I have never observed this glycosuria in my patients. In a hare weighing 3480 grammes it was necessary to administer 100 grammes of glucose in order to find this substance in the urine, which shows that one would have to give to a man weighing 55 kilogrammes, 1650 grammes of glucose-syrup in order to see the latter pass out in the urine. Nothing like this quantity has ever, of course, been administered, and we keep rigorously to doses not exeeeding 100 grammes of glucose-syrup a day dissolved in a quart and a half or two quarts of water.

As there exist several sorts of commercial glucose, you should prescribe the solid purified glucose. Make a syrup containing 750 grammes of solid glucose and 250 grammes of water, for one litre of syrup. The quantity of water is just sufficient to make a good syrup.

This syrup may be flavored with tincture of orange-peel. The dose would be five tablespoonfuls during the twenty-four hours.

If you make use of G. Sée's formula, you may prescribe as follows: Lactose 500 grammes; divide into ten powders. Dissolve

* Sophie Meilach, "The Sugars as Diuretics" (*Thèse de Paris*, 1889).

† Moutard-Martin and Charles Richet, "Experimental researches on Polyuria" (*Arch. de Phys.*, t. viii., 881, p. 1).

‡ See the entire article in *Medical Age*, August 10, 1889, and entitled, "A New Diuretic for Heart-Disease." See also THERAPEUTIC GAZETTE, 1889, p. 537.

one powder in a quart of water. Two powders to be thus taken during the twenty-four hours.

You can make use of either of these sugars in cases of urinary insufficiency, and even in the event that there should be vomiting or a great repugnance for sugar, do not forget that you may employ the rectal method, the solutions of glucose or of lactose being perfectly absorbed by the large intestine. So much for the group of diuretics.

Quite as important a group is that of purgatives, for the intestinal mucous membrane can supply the place of the renal as an emunctory. Every patient effected with urinary insufficiency should have at least two or three free liquid stools during the day.

To obtain this result, any laxative may be used. You may employ either pills or powders or purgative waters, or even drastics when symptoms of uræmia appear, and you should adapt your laxative to the condition of intestinal tolerance of your patients.

Finally, the skin completes these methods of elimination. It has been maintained that the cutaneous surface is an external kidney; this is true within a certain limit, for urea and uric acid may be discovered in the sweat.

It is therefore necessary to promote actively the functions of the skin in your patients, and this may be done by daily lotions made with a sponge wrung out of tepid water to which has been added a little cologne-water or some other alcoholic aromatic; after having dried the patient, an energetic dry friction should be given with a leather glove.

But it often happens that despite all efforts, and the use of the most energetic of the diuretics, purgatives, or sudorifics, you are utterly unable to cause the elimination of a sufficient quantity of the toxines accumulated in the blood, and the phenomena of poisoning become more and more pronounced. It will not do yet to despair, for we can act upon the whole mass of the blood in order to cause disappearance of the toxines which have accumulated there. The first method to employ is inhalations of oxygen, which augment the vitality of the red globules, excite the combustions, and permit the destruction or transformation of certain of these toxic substances.

The other process, still more topical, consists in blood lettings, either local or general; the latter are preferable, because they give issue to a certain quantity or the poisons accumulated in the blood.

These blood-lettings must be measured by the resistance of your patient. In certain cases even, when the patient is too feeble, you may have to resort to transfusions, and we[re] not for the difficulty connected with the op[era]tion of transfusion, it is a very rational a[nd] physiological procedure, and the numerous e[x]amples which Dieulafoy has furnished are proof of its efficacy. There remains to b[e] considered the question of hygiene, and wi[th] this I shall finish the lecture.

I have endeavored to show you that all t[he] grave accidents which supervene by reason urinary insufficiency depend on the accu[mu]lation of toxines in the economy. Whe[nce] come these toxines? They have three origi[ns] some are the result of the regular and phy[s]ological working of the organism. Arm[and] Gautier has, in fact, shown us by his expe[ri]mental researches that the animal cell, like t[he] vegetable cell, produces alkaloids. A seco[nd] source is the faulty functional activity of t[he] digestive tube, which, by vicious fermen[ta]tions, leads to the production of alkaloi[dal] substances belonging to the group of p[to]maïnes. Another origin is the food; in fa[ct] he who lives largely on meat introduces in[to] his economy a certain number of cadave[ric] alkaloids along with his food. To each of these origins corresponds a special the[ra]peutic indication.

The first of these indications is difficult t[o] meet. It is impossible for us to prevent t[he] regular integrations and disintegrations co[n]nected with the exercise of the organic fu[nc]tions; nevertheless, on this particular po[int] we have some indications furnished by phy[s]iology. Whenever we exaggerate the fu[nc]tions of the cells we augment thereby t[he] production of these toxines. We should th[us] require patients affected with urinary insu[f]ficiency to avoid all fatigue and all occasio[n] of physical overwork, as well as mental. It seems, in fact, proved that exaggeration of the intellectual functions constitutes a ve[ry] table physiological labor.

The second indication consists in reg[u]lating the digestive functions and in co[m]bating as far as possible the vicious fermen[ta]tions which may take place there. This is the *rôle* of intestinal antisepsis, and here we find ourselves, as in the case of those wi[th] dilated stomachs, under the conditions of special treatment. You will then make the patients take the capsules of salicylate of bi[s]muth, of which I have before given you th[e] formula:

℞ Salicylate of bismuth,
Magnesia,
Bicarbonate of sodium, āā ʒiiss. M.
Sig.—Divide into 30 medicinal capsules.

cases that demand a more energetic
n you will employ the following formula:

℞ Salicylate of bismuth,
Magnesia,
Naphthol *a*,
Bicarbonate of sodium, aa ʒiiss. M.
Sig.—Divide into 40 medicinal capsules.

f the naphthol is badly supported by the
nach, you can substitute salol in the same
e.

he last indication is met by the vegetarian
men. Already, in my "Alimentary Hy-
e," I have in connection with the dietetic
tment of albuminuria alluded to the treat-
t of Senator. At the time when Senator
lished his views of the dietetics of renal
ases, the labors of Bouchard and of
tier had not been made known in their
ety. To-day we know on what basis
a treatment may be established.

suffices to subject the individual to a
tarian regimen, or, to speak more pre-
ly, to a diet which shall reduce to a mini-
n the toxines contained in the aliments.
ve given you in a previous lecture on the
tarian regimen all the reasons which led
to consider this regimen as fulfilling ad-
bly all the conditions required. I shall
then, repeat these reasons; it will be
cient if I sum up briefly the dietetic rules
ch I then gave.

he patient should live exclusively on
, eggs, starches, green vegetables, and
its.

. The milk should be taken under all its
ns,—raw or boiled; cheese which is nearly
h; creams.

. The eggs shall be hard done; scrambled
s; eggs smothered in cheese (*soufflés au
mage*).

. The starches should be in mash or stew;
wed potatoes, beans, lentils, *revalescière*,
achout, lactated farina; gruels and pud-
ngs of wheat, rice, Indian corn; barley,
tmeal, macaroni, strained panada, etc.

. The vegetables should be thoroughly
oked,—stewed carrots, turnips, Julienne;
oked salads, stringed beans, green peas,
pinach, etc.

. Stewed fruits.

If you order meat, see that it is well
oked, overdone rather than underdone.
Cooking destroys the elements of putrefac-
ion and fermentation.

You will absolutely forbid game, mollusks,
ustaceans, fish, all old cheeses, because
ese substances contain ptomaïnes. I insist
especially on those developed by putrefying fish; these ptomaïnes are the most rapidly produced and the most toxic. As for mollusks, poisonings produced by clams, oysters, and mussels have for these causes the same toxines.

The patient may eat bread, toasted or plain.

For beverages he should drink milk, beer, or extract of malt. Never any spirituous liquors; never pure wine.

This regimen applies only to cases of little intensity. When the symptoms of uræmic poisoning are menacing, there is but one alimentary substance applicable,—namely, milk.

Such are the considerations which I desire to present on the treatment of urinary insufficiency. I have shown you that there is much which therapeutics can accomplish. In the next lecture I shall take up the opposite side of the question, and tell you what you are to do when there is exaggeration of the urinary secretion; in other words, I shall speak of the anuric medication.

TREATMENT OF THE SEPTIC ACCIDENTS OF THE PUERPERAL STATE.

By E. P. Hurd, M.D., Newburyport, Mass.

FORTUNATELY, puerperal fever is relatively infrequent. But a small proportion of the cases that come under the observation of the obstetrician present any serious deviation from the normal. And yet even country physicians practising in localities whose sanitary conditions seem to be irreproachable have not been altogether exempt from puerperal accidents. Though death from septic causes in private practice is rare, yet it does sometimes occur, and the milder forms of septicæmia, manifesting themselves in headache, fever, and uterine tenderness, lasting several days; in tedious convalescence after confinement, with circumscribed peritonitis, phlebitis, with mammary abscess or other complication, must have now and then come within the experience of even the self-confessed "old fogy," who does not believe in the modern "doctrines of germs," never practises antisepsis, and yet has always been "lucky."

In city practice septic complications must be pretty common, if men of large obstetric practice, like Dr. Abram Jacobi, own to seeing

"forty to fifty bad cases every year, few of which recover."*

I am inclined to think that there is some unintentional exaggeration in Dr. Jacobi's statement, for to see forty or fifty cases of puerperal septicæmia a year is a very large number for any practitioner, and I do not believe that Dr. Jacobi is any less careful about asepsis and antisepsis than any of his colleagues. The cases to which he alludes, I take it, were women that had been attended by midwives or physicians who use no antiseptic precautions; when seen by Dr. Jacobi these patients were in an advanced condition of puerperal sepsis. It is true that the midwives of this country have not yet to any great extent been indoctrinated into the modern methods, and the lower classes in our large cities still largely trust their obstetric cases to midwives. This fact gives emphasis to the declaration of Dr. Lusk at a recent medical meeting that the metropolitan lying-in hospitals, once pest-houses for puerperæ, are now the safest places in which women can be confined, for the mortality from childbed fevers is less than one per cent.

[Since this article was written I have been informed by Professor W. L. Richardson that the above experience of Dr. Jacobi is by no means exceptional. Dr. Richardson assures me that his consultation practice averages one case of puerperal septicæmia a week. These are mostly the patients of physicians who take no pains to obtain disinfection of the hands and person; many of these puerpuræ belong to the lower walks of life and live under bad hygienic conditions.]

NATURE OF PUERPERAL INFECTION.

It is only within the past twenty years that anything positive and definite has been known of the nature of puerperal infection. Hippocrates knew puerperal fever, and described it as erysipelas of the womb.† Various theories were subsequently propounded as to the causes of this disease, among the most plausible of which were such as regarded it as due to a suppression of the lochia, to the absorption of effete, putrid matters at the placental site. Harvey, one of the old writers on obstetrics, whose treatise in Latin on the "Management of the Puerperal State" has come down to us as a sort of medical curiosity, attributed great importance to the lochial discharge, as being *par excellence* nature's deter-

gent agency. When the lochia are suppre the blood becomes poisoned with phlo elements; on the condition of the lochi base our prognosis of the case.‡

As to the contagiousness of puerp fever, whether epidemic or sporadic, was admitted by many of the old writ Thus, Denman, alluding to epidemics w prevailed at the Hôtel Dieu, Paris, in 1 in the London hospitals in 1778, etc., rega the contagious nature of the disease as f proved, and affirms that it "has often b conveyed by midwives and nurses from patient to another." The following pass from a work published nearly a hundred y ago, is worth reproducing, for subsequent perience has only confirmed and elucid what Denman then wrote:§

"This fact [that of contagion] explains reason why persons practising for many y with the most enviable success have at or more periods of their lives, without change in the principles of their practice, with a number of unfortunate cases, w perhaps, an adjoining neighborhood has b entirely free from such diseases. Of th have known many instances.‖ Nor sh this subject remain a barren speculati but, according to the value set upon rep tion, teach those who are engaged in the p tice of midwifery the impropriety of their tending patients in fevers and other danger diseases, if it can be possibly avoided; an use every precaution that they do not c contagion from one patient to another. nature and power of the contagion seem to be perfectly understood, and it may e in many diseases in which it has not yet b suspected."

At the epoch when Denman wrote, living nature of contagion was not suspect the names bacteria, microbes, germs, e were unknown to science. Pathologists a physiologists no doubt puzzled themselves

* *Boston Medical and Surgical Journal*, May 29, 1890 ("Report of the Association of American Physicians").

† "Si mulieri pregnanti fiat in utero erysipelas, lethale est."—HIPPOCRATES.

‡ "Uterus a placentæ separatione, præcipue viola excoriatur, tanquam ulcus ingens internum, lochi liberiore emanatione deturgitur et mundificatur. Idi per excreta de puerperæ sanitate aut discrimine sta mus" (Harvey, "Exercitatio de Partu," p. 556).

§ "Introduction to the Practice of Midwife London, 1800.

‖ The annals of obstetrics are full of examples wh puerperal fever has followed in the track of a partic accoucheur until his path has been a "highway of se chres." See the valuable monograph, "On Puerp Fever," of Dr. Oliver Wendell Holmes (1844); a Meigs "On Child-Bed Fever;" Ramsbotham's, Mei and Churchill's "Obstetrics;" Copeland's "M Dictionary," article "Puerperal Fever," etc.

ng to account for the fact of a poison tiplying itself in the blood, and able to ct and destroy thousands of individuals. there any chemical poisons not of an ani- ed, figured nature, but of a soluble kind, ch are known to produce similar results? ink that, in the light of modern science, may answer this question in the negative. reover, the contagium of so many infec- s febrile diseases of men and animals has n discovered, and the bacteria identified, we might be warranted by an effort of ictive reasoning in affirming that all in- ious diseases are microbic; or, to quote words of Bouilly, that "contagion is the tion of a living element."*

ut this is not all; there is evidence that specific contagion of the puerperal dis- s is now known. It will not be amiss to up the principal data connected with this ory:

Mayerhofer was among the first to find ro-organisms in purulent fluids from the ral and peritoneal cavities of puerperal ents; these appeared as small round es, arranged as threads. Coze and Feltz ut the same time (in 1869) detected in blood of puerperal fever patients round uscles arranged in the form of chains. deyer found the same in the parame- m and in pus from the peritoneal cavity; lescribes these micro-organisms as round- ed micrococci in the form of chains. h, Rindfleisch, Heiberg, Klebs, Wolff, and en confirmed these observations in the owing years. Steurer "was able to follow round, chain-like micrococcus from the ntherial lining of the endometrium through uterine lymphatics into the peritoneal ity." Fraenkel several times found them peritoneal exudations. In 1884, Lomer, n whose exhaustive article in the *American rnal of Obstetrics* for July, 1884, we quote se facts, identified the same microbes in ee puerperal cases, which occurred during winter of 1884 in the University Poly- ic which is connected with the Woman's spital in Berlin. In one patient the blood s literally swarming with micrococci in ins; in all, these micro-organisms were covered in the exudations and in the dis- ed organs after death.

Passet has endeavored to classify these und micro-organisms, which are prone to sume the form of clusters or chains; and it seems to be now proved that the streptococcus and the staphylococcus (pyogenes aureus, pyogenes albus, citreus, etc.) seen in puerperal exudations are common to all acute abscesses and suppurations, and are the ordinary septic bacteria. Nay, more, traumatic or surgical fever is caused by the same micro-organisms, and under peculiar circumstances they seem to have the power to penetrate the pores of the skin, and cause furuncle and anthrax.

At the bedside, as Lomer remarks, erysipelas and puerperal fever are quite different diseases, but in both we find morphologically the same micrococci, and they give similar results with vaccination. The more recent researches of Vidal (in 1889) confirm this view, and make it almost certain that the micrococcus of puerperal fever, of erysipelas, of puerperal mastitis and phlebitis, is one and the same.

Although the microbic element of puerperal infection presents itself under different forms (staphylococcus, streptococcus, etc.), there is no proof that the morphological differences imply differences in nature and pathogenic action, and Chauveau and Arloing maintain with great probability that it is always the same microbe under different states of development. More, doubtless, depends on the organic soil (*terrain*) and susceptibility of the patient than on any particular virulence of the microbe, as to what morbid changes shall be effected.†

Besides the micrococci, different kinds of linear bacteria have been found in puerperal exudations in combination with the other septic bacteria; thus the septic vibrio and the *bacillus pyogenes fœtidus*. Inoculations in animals have been found to produce acute abscesses and blood-poisoning.

As for the terms to be employed to designate the general phenomena of blood poisoning, I believe, with Delafield, that the familiar word septicæmia includes everything, and that this word may be used as synonymous with pyæmia, septo-pyæmia, inflammatory fever, surgical fever, traumatic fever, suppurative fever, and purulent infection.

Whether there be a mild form of septicæmia caused by the absorption of putrid elements, the products of the bacteria of putrefaction, without any co-operation of the pyogenic micrococci,—a form of blood-poisoning, called by Matthews Duncan *sapræmia*,—

* "La Nature Vivante de la Contagion," Paris, 84.

† *Vide* Hallopeau, *Pathologie Générale*, article "Septicemie."

it remains for bacteriologists to determine. Whether this be so or not, the proposition still remains good: *No bacteria—no infection, no septicæmia, no suppuration.**

PREDISPOSING CONDITIONS.

I shall not here enter into the discussion of the question whether puerperal infection may ever be autogenetic as well as heterogenetic. Certainly putrefying placental *débris* or blood clots and foul lochia may give rise to a poison which, when absorbed, will cause symptoms undistinguishable from septicæmia, and it is natural to suppose that in such cases the blood-poisoning is autogenetic. Every physician of any experience has seen such cases; often the fever is very slight and transient, and subsides as soon as the uterus is washed out; in other cases, the source of septic infection continuing, violent symptoms of purulent infection with metastatic abscesses follow. Practically, microbes are concerned in the autogenetic as in the heterogenetic forms, and there is reason to believe that if the antiseptic treatment be rigidly carried out from the first, there will be no morbid manifestations whatever.

Certainly, in whatever manner the disease may start, the round-cell bacteria are found abundantly in the tissues and exudations of all grave cases, associated with various linear forms, and when inoculated in animals they give rise to similar symptoms and lesions. Some of the most striking experiments are those of Pasteur, D'Espine, and Schüller. The former produced septicæmia in animals from the product of his cultures of the round micrococcus. Schüller found that subcutaneous injections of septic material in female animals, about the time of or [illegible] subsequent to delivery, produced a diphtheritic ulcerative process on the uterine surface which determined the separation of the placenta; diphtheritic patches were also found in the cornua of the uterus.†

If the question be asked, "How do the bacteria act in producing these morbid results?" it must be confessed that a perfect satisfactory answer cannot yet be given. It may be affirmed that their presence determines mechanical irritation, inflammation and even gangrene of parts in which they congregate; that they secrete poisons (ptomaïnes), which paralyze the heat-regulating and other centres of innervation; that they cause gross changes in the blood, such as corpuscular disintegration, decrease of fibrin, diminution of oxygen, increase of carbonic acid; changes not widely differing from those of fermentation and even putrefaction.

The harm which they may do depends:

1. On the quantity of the microbes which invade the organism. It is evident that in the struggle for existence between the living cells of an organic aggregate and the pernicious microbes, the latter will be much more easily overcome if few in numbers; while, like the strongest and best-disciplined army, the healthy living cells may be outflanked and overcome by an ever augmenting foe.

2. On the receptivity of the organism. It would be easy to show that the puerperal woman is in a state of unusual receptivity for septic microbes and their depredations. There is a large open wound at the placental site, with lymphatics and vessels ready to drink up the poison; there are vaginal, vulvar, and perineal lacerations; there are more or less of decidual *débris* and clots remaining behind in the passages after the labor is over; moreover, the blood of the puerperal woman is exceedingly prone to take on septic changes.‡ Nevertheless, despite all this, there are many

* It is the recorded opinion of Rokitansky, Semmelweiss, and others that morbid matter acquired in the dissection of subjects not dying of child-bed fever may be conveyed by the dissector, and excite the disease in a patient delivered by him; and to this, among other causes, was formerly attributed the presence of puerperal fever in the wards of the Vienna Lying-in Hospital. A celebrated foreign practitioner attributed two outbreaks of this disease among his private patients to his having handled morbid specimens just before attending a patient in her accouchement (Churchill's "System of Midwifery," Am. ed., p. 547).

With regard to *suppuration*, I believe that it has been sufficiently established that in any experimentation (whether with croton oil, turpentine, or any other irritant), if rigid pains be taken to exclude all pyogenic microbes, there will be no pus-formation. (See Dr. Hermann Knapp "On Fermentation, Putrefaction, and Suppuration," in the *Boston Medical and Surgical Journal*, January 27, 1887; see also Hallopeau, *Pathologie Générale*, article "Suppuration," and page 321.)

† Lusk, "Science and Art of Midwifery," p. 610.

‡ "When we reflect on the state of the puerperal woman, remembering the condition of the genital organs, the placental wound, the abrasions of the cervix and os uteri, and laceration of the perineum, the wonder is not that so many women have septicæmia, but that so many have escaped the danger from within and without. The important fact to be remembered here is the protective power of the granulations, for, generally before septic poison can be developed, granulations have covered the wounds and abrasions, and thus an impermeable barrier is set up to the entrance of the poison" (Dr. W. B. Rodman, in *N. Y. Med. Record*, 1871 p. 18).

omen who prove refractory to the infection. uring the prevalence of epidemics, a cer- in proportion of lying-in patients escape ogether, and those that are infected are t all infected to the same degree. There e certain elements with which we are little quainted that influence receptivity. The ason of the year has a certain influence; e heat of the summer is a factor of dan- er. Lack of ventilation and other unsani- ry conditions, as exposure to sewer-gas or xious odors; dampness of the habitation; eagre, insufficient nourishment, depressing motions,—women who have been delivered illegitimate children are said to be especially able to puerperal diseases and to succumb,— xhaustion from overwork or repeated child- earing, etc., are all predisposing conditions.

"Puerperal women," says Doleris, "are ounded women, and in addition they have een subjected to hemorrhage, shock, weak- ess following on prolonged labor, and their lood and tissues generally have been pecu- arly modified. Here there are a certain umber of predisposing causes. Further, till, the nature of the wound, its situation, he presence of materials in a state of disin- egration or decomposition, the retention of placental or decidual *débris*, the presence of nternal wounds on the vulva, in the vagina, n a position peculiarly favorable for the en- rance of germs, even before delivery. Such, among others, are additional predisposing causes. We would not thus imply that always and in every situation infection proceeds from local lesion of the wound, for this would be to ignore the simplest undoubted pathologi- cal principles, but unquestionably the cases of infection from the uterus are the most fre- quently observed. It is only exceptionally that infection occurs by other routes."

This is undoubtedly the prevalent view of to-day, and accoucheurs who scrupulously practise antisepsis are less and less disposed to believe in infection except through the uterine wound. That, however, in excep- tional cases, owing to greater virulence of the poison, owing to greater susceptibility of the lying-in woman, the pathogenic agent may obtain access to the blood and tissues of the patient through other channels,—as by the air of respiration,—seems probable, if we may trust the experience of some practitioners.

MANIFESTATIONS OF PUERPERAL INFECTION.

As has been said above, the time has not yet come when puerperal disorders can be differentiated according to a particular mi- crobe which occasions them. Facts compel us to assume a very close etiological relation- ship between the puerperal diseases and the zymotic diseases (especially typhus, diphthe- ria, and scarlet fever), cadaveric poisoning (from dissection wounds), and erysipelas. Regarded from the stand-point of etiology, puerperal fever must be regarded as ONE, now taking on a mild aspect, and soon disap- pearing, as the organism, but slightly impreg- nated with the virus, successfully resists and expels the microbe invaders; at another time appearing as a severe sporadic or epidemic colpo-metritis, para-metritis, or peritonitis,* when the microbes, like a vast army, have taken possession of the organism, and the natural forces, aided by all the resources of medicine and surgery, are taxed to their ut- most; at still another time appearing in a form of the greatest malignity, when, as if in con- sequence of some unexplainable susceptibil- ity, the patient is as tinder to the spark, when the organism is overwhelmed from the start, and death is inevitable. All the infectious diseases manifest themselves at some periods in a more virulent form than they do at other times. Thus, epidemics of scarlet fever, measles, small-pox are sometimes very mild, on other occasions are characterized by great gravity; and that the same should be true of puerperal fever is strictly in accordance with analogy. More, perhaps, depends on the sus- ceptibility of the patient—on the nature of the culture soil—than on the virus, and that under circumstances of peculiar vulnerability of constitution (overcrowding, bad aëration, insufficient alimentation, etc., being factors) the puerperal poison may find access to the deep tissues and humors of the lying-in woman before there has been any abrasion or other solution of continuity, is no more strange than that persons broken down in health from diabetes or any other morbid condition should become victims of furuncle or anthrax, though the microbe must have penetrated the unbroken cuticle.†

* "Epidemics," says Charpentier, "are purely the result of a wider dissemination of the contagion, the cause and mechanism remaining the same. In order that an epidemic may exist, we need the infectious spark in the shape of the germ, and the diffusion of this germ. Now, one single circumstance brings together these conditions, and that is *overcrowding*. In over- crowding, 1, the morbid germs are multiplied; 2, the points of contact are thus increased; 3, there is insuffi- cient aëration, oxygenation; 4, the resistance of the woman to disease is thus lessened."

† Doubtless by the pores and follicles. If through the digestive tube, why may not the microbes of puer-

In mild cases of septicæmia there may be no visible local lesions; there is a febrile rise for a day or two, with headache and malaise, then *restitutio ad integrum*, rapidly takes place. In severe cases, local inflammations—diphtheritic, purulent, gangrenous—predominate; the fever is excessive, there is disturbed involution of the uterus, with sensitiveness and pain over that organ, the constitutional disturbances are intense. Steurer's observations* are of the greatest interest in this connection.

His cases, which occurred during the epidemic of puerperal fever at Bellevue Hospital, New York, in 1874, "all presented diphtheritic patches about the vulva, or upon the mucous membrane of the vagina and uterus. . . . From the patches the bacteria could be traced between the muscular fibres and deep down into the canalicular spaces of the connective tissue, where their presence gave rise to cellulitis. From the canalicular spaces they entered the lymphatics, with resulting lymphangitis. In many cases the lymphatics could be traced along the broad ligaments to the ovaries (puerperal oöphoritis), and into the subperitoneal tissue of the lumbar region. By perforation of the walls of the lymphatics which directly underlie the peritoneum, they made their way into the peritoneal cavity, and excited pyæmic peritonitis. . . . The wide stomata upon the abdominal surface of the diaphragm allowed the facile entrance of the organisms into the lymphatics. Waldeyer found in diaphragmitis the lymphatics of the diaphragm filled with bacteria. And thus, following the lymphatic system, if we only admit that the round bacteria are the carriers of sepsis, a fact which hardly admits of dispute, the frequency in severe types of puerperal fever of inflammations of the serous membranes—of the peritoneum, the pleura, the pericardium, and the joints—finds an easy explanation. . . . Sometimes the bacteria pass directly into the veins, and give rise to phlebitis. . . . When the bacteria enter directly into the circulation, they sometimes, in passing through the heart, adhere to the endocardium and valves, causing exudation, ulceration, and decomposition, and thus give rise to the so-called endocarditis ulcerosa puerperalis."

peral fever? I have seen patients die by the extension and gravity of a carbuncle. Now, as far as microbiology can tell us, anthrax is caused by the same streptococcus that causes septicæmia.

* Cited by Lusk in his "Science and Art of Midwifery."

PROPHYLACTIC TREATMENT.

A knowledge of the causes of puerperal fection irresistibly suggests the proper p phylactic treatment.

The indication is to exclude all bacter *no bacteria—no infection, no putrefaction, suppuration.* The same general principles asepsis, which have given such uniform good results in surgery, must be applied all their rigor to obstetrics.

Semmelweiss may be regarded as the fath of modern antiseptic midwifery. His wo in which he shows that puerperal fever ow its origin to the absorption of decomposi organic matter and is only a form of pyæm was published in 1847. He afterwards add that this disease might also arise from t decomposition of the lochia, blood clots, m crosed or placental tissue. Hence if obstet cians would prevent puerperal fever in th patients, the maintenance of absolute cle liness, and sometimes disinfectant ablutio and irrigations, become necessary.†

It would take too much time to go fu into the history of antisepsis in midwife Such treatises as that of Paul Bar, "On An septic Methods in Obstetrics;" H. J. Gar gues, "On Antiseptic Midwifery;" Dr. Robe Kucher, "On Puerperal Convalescence an the Diseases of the Puerperal Period;" an the recent expositions of Lusk, Charpenti Winckel, Playfair, Leishman, Barnes, Pa vin, etc., in their respective text-books, an or ought to be, in the hands of all practitio ers. Especial interest in this country has be directed to the subject since the publication the important paper read by Dr. T. Gaillar Thomas before the New York Academy Medicine in 1844, in which rather extre measures of prophylaxis were advocate since the discussion which followed th reading of that paper in 1884 and in 1885 since the promulgation of the results o tained by Dr. Garrigues from antiseptic mi wifery in the lying-in wards of Maternit Hospital, New York; by Dr. W. T. Lusk, the Bellevue Hospital; by Dr. W. L. Ric ardson, in the Boston Lying-in Hospital; Dr. B. C. Hirst, at the Maternity Hospita Philadelphia; by Tarnier, at the Paris M ternity; by the chiefs of the obstetric d partments in the hospitals of Vienna, Berli and other foreign cities. These results a

† See a valuable paper in the *Boston Medical and Surgical Journal*, January 27, 1887, by Dr. W. L. Richardson, "On the Use of Antiseptics in Midwifery Practice."

summed up by Dr. Lusk in a paper read re the Association of American Physis, May 13, 1890. Only one expressive sence will be here quoted: "Hospitals which e formerly the seat of violent outbreaks puerperal fever are now the safest places women in labor."

he order of events in the history of antitic midwifery are as follows:* 1. The intution of antiseptic prophylaxis (by means chlorine-water), by Semmelweiss, in 1847. The creation of antiseptic surgery, by Lis, in 1866 3. The application of antisepsis midwifery, by Stadfeldt, of Copenhagen, in o, and the use of carbolic acid as the best iseptic. 4. The introduction of bichloride mercury into obstetric practice as a better iseptic than carbolic acid, by Tarnier, about o. Since the beginning of the last decade leading hospitals of this country and the world have adopted the essentials of what ow known as antiseptic midwifery.

Technique.—The accoucheur of to-day has esponsibility resting upon him from which accoucheur of a former age was free. He ls, in a sense which he never felt before, greater knowledge of the present day rned upon him, that the life of his patient in his hands. If he do not carry infecn to the patient, and if he employ the per means to make the patient and her vironment aseptic, there is a fair certainty t restoration will take place normally. nowing that in the great majority of cases puerperal septicæmia the patient is inted by the hands or instruments of the coucheur, he will take the utmost pains t both hands and instruments are both an and aseptic. Before making an examation, the sleeves are rolled up above the bows, and the hands and forearms are oroughly scrubbed with soap and water; e nails and the spaces under them and the reases about the skin are cleaned with a stiff rush. Then the same parts are soaked one two minutes in a sublimate solution, 1 to 000. Paul Reynier adds that the hands and forearms thus disinfected should not be wiped, nless one is sure of the aseptic condition of the towel.† The examining finger may then be greased with carbolized vaseline, or with an ointment composed of 1 part eucalyptus and 7 parts vaseline; whenever afterwards an examination is made, these antiseptic precautions must be repeated.

Instruments (when used) must first be cleansed in soap and water, then dipped in boiling water, which is a sufficiently good antiseptic, and kept till needed in a 1 to 20 carbolic solution. Before applying forceps they should be greased with eucalyptus vaseline. Garrigues recommends carbolized glycerin.

During the first stage of labor, the patient should be disinfected by a vaginal injection of corrosive sublimate, 1 to 3000, about a quart being used for this purpose; the external genitals, hips, nates, and lower abdomen should be washed with a somewhat stronger solution,—1 to 1000. For convenience, the physician may carry in his satchel little packages, each containing fifteen grains of corrosive sublimate; one of these to a quart of water makes a solution of the strength of 1 to 1000. Or the antiseptic tablets of the pharmacists may be employed; each tablet contains seven and a half grains of the sublimate. A basin containing the stronger (1 to 1000) solution should be kept in a convenient place in the lying-in room; into this the physician should dip his hand before making an examination. It is needless to say that vaginal or uterine injections should be made with syringes that have glass or rubber suction-tubes and canulæ, as metal corrodes when in contact with corrosive sublimate. Moreover, only the weaker solutions (1 to 3000 or 1 to 4000) should be used for such injections. The injection may be given with the patient lying on a bed-pan, or (in the absence of this) on a thick folded blanket, and she should be turned upon one side, or be made to sit up for a minute after the injection, that the solution, after distending the vaginal pouch, may all run out, as cases of poisoning from absorption of sublimate solutions are on record.

This one injection before delivery is generally sufficient. Some authorities recommend a carbolized or sublimate douche immediately after labor, and if this be used hot, it has a favorable effect in stimulating uterine contractions and stopping flowing.

In the paper read by Dr. T. G. Thomas before the New York Academy of Medicine, December 6, 1883,‡ that eminent authority advised to repeat the vaginal injections every three hours before, and every eight hours after, labor. The voice of the medical profession has very generally been against interference to this extent with what may be called a natural physiological process, and most ob-

* Garrigues, *loc. cit.*

† "Recent Conference on Asepsis," *Bull. et Mém. de la Soc. de Méd. pratique.*

‡ *N. Y. Med. Journ.*, December 15, 1883.

stetricians now content themselves with one antiseptic injection before labor (unless the first stage be unusually long and tedious), and none after labor.* If, however, the lochia should become at all offensive, and especially if any febrile symptoms should arise, the vagina and uterus should at once be washed out with a carbolized solution (two and a half per cent.), or with a sublimate solution,—1 to 4000. This injection should be repeated every six or eight hours, till the lochia lose their fetor, and till all febrile symptoms disappear. Dr. W. L. Richardson speaks favorably of iodoform pencils (crayons of cocoa-butter incorporating ten grains of iodoform), which may be carried up into the uterus night and morning and left there.

The placenta, if it does not speedily follow the fœtus, should be delivered in as antiseptic a manner as possible. Credé's method is recommended by Richardson and Grandin. Then the external genitals should be thoroughly cleansed, soap and water and the sublimate solution being employed, any perineal lacerations closed with antiseptic catgut, and an aseptic pad applied. These pads may be prepared by soaking common napkins in a sublimate solution (1 to 3000), and allowing them to dry. The nurse should be instructed to have a quantity of these napkins ready. "The object of these pads is to seal the entrance to the vagina and uterus by a germ-proof protective against the attacks of septic bacteria from the air and other external objects."† Oakum has been used by some obstetricians, and seems to answer a very good purpose.

The pad recommended by Dr. W. L. Richardson resembles Liston's "protective," and as much stress is laid on this part of the dressings, especially by those that omit the douches after the third stage of labor, I will describe Dr. Richardson's method of preparing this pad:

A strip of Canton flannel (nineteen by four and a half inches) is placed upon a table, with the soft uppermost. On the centre of this is laid a piece of bolized cotton (eleven by four and a half inches), a half an inch in thickness when not compressed. the centre of this is a piece of oiled muslin (nine by inches). On this is placed the pad itself, which is of what is known as absorbent scrap or waste cloth in cheese-cloth, and of a size sufficient to cover the muslin, and about half an inch in thickness before wet or compressed. This pad, before using, is di in a solution of corrosive sublimate (1 to 3000) dried. Whenever a pad with its binder is removed a fresh one substituted, the old pad, including the C ton flannel, etc., is burned up.

In the discussion which followed Dr. F. Adams's paper before the Essex No District Society, one of the speakers (Dr. C. Huse) stated that he had been in the ha of using two towels. One of these he d into a 1 to 1000 solution, and after wring it out with his hands, he folds it into a squ pad, and places it over the vulva. The secon towel he likewise wrings out of the antisep and folding it once likewise, passes it betwe the legs, and pins it to the binder at fro and back.

A Word about the Environment of the P tient.—The room occupied by the puerp should be clean and well ventilated, a should not be in propinquity to cess-poo pig sties, or stables. In hospitals it is qu possible to carry out Dr. Thomas's requi ment that the room in which the confinem is to take place should have the floor, wal and furniture thoroughly washed with a 2 per cent. solution of carbolic acid or m curic chloride, 1 to 1000, and the bedste and mattresses should be sponged with t same solution. Curtains, carpets, and uph stered furniture should be dispensed with far as possible.‡

Ought the Physician when attending Con gious Diseases to undertake Confinement Case —This is a question which, before the da of antiseptic midwifery, would have been a swered unqualifiedly in the negative. At now, without the most rigid attention to pe sonal cleanliness, and an entire change clothing, it would not be right for the physici to go from a case of scarlet fever, diphther especially erysipelas, or from a post-morte to a case of labor. I believe, however, th such thorough disinfection of the person c be obtained that it will be safe for the phy cian who is attending such diseases to ent the lying-in room. Every article of clothi

* It may, however, be affirmed that physicians in private practice only exceptionally employ the vaginal douche as a routine practice, and that the intrauterine douche is now never used except when there is especial reason to fear that infection has entered the uterus. "The douche repeated at short intervals," says Lusk,* "is not unattended with drawbacks. It interferes with the localizing processes by which most of the pelvic inflammations become self-limited; it helps to extend the morbid condition of the uterus to the tubes, and, if continued long enough, paralyzes the uterine walls."

† Dr. H. F. Adams, *Boston Med. and Surg. Journ.*, March 1, 1888.

* Lusk, "Antisepsis in Midwifery," *Medical News*, May 31, 1890.

‡ Dr. T. G. Thomas, in *N. Y. Med. Journ.*, December 15, 1883.

must be changed, the whole body, including the hair and whiskers, must be washed, then bathed with a strong boric acid solution, as Thomas recommends; then especial attention must be given to the disinfection of the hands, fingers, and finger-nails in the manner before indicated.

Among the prophylactic means should be included a suitable tonic and fortifying regimen, especially needful when the patient has been exhausted by protracted labor or by hemorrhage. Quinine, wine, and even brandy may be indicated, with such nutrients as the stomach can bear; the vital forces are thus rallied, and the reparative processes favored. Ergot, given at the completion of the second stage of labor, will promote uterine contraction and vascular tonicity. Some obstetrical authorities advise giving ergot through the entire puerperium.

Many physicians may think antiseptic midwifery encumbered with too great fussiness of details, but there is not one of these details but is important, and it is quite possible that valuable lives may now and then, in the lifetime of even a country physician, be saved by rigid attention to such minutiæ as have been above set forth.

CURATIVE TREATMENT.

In sapræmia, irrigation and cleansing of the utero-vaginal cavity may be about all that is needed; the headache and fever may demand a saline draught of acetate of ammonium or nitrate of potassium, and an acetanilid tablet. Quite often I have seen the fever rapidly subside after the administration of a hot carbolized uterine douche. Sapræmia is kept up by a continuous supply of the poison. To stop the supply is the problem of cure.

Of course, it may not be possible to wash out the peccant *débris*—which may be a blood clot, a shred of membrane, a small bit of placenta—by deodorizing irrigations, and it may be necessary to introduce the finger, or even the whole hand, well disinfected, into the uterus, and remove the offending cause. Then the washings must be repeated three or four times a day, till all fetor of the discharges has disappeared and the temperature has become normal. Intrauterine injections, when needed, must be made by the physician, and not trusted to the nurse.

I think that cases of sapræmia in connection with abortion are more common than with labor at full term, for the reason, probably, that abortions are frequently neglected, often lacking the ministrations of a physician, till some septic complication arises. It has been my lot continually to see cases of sapræmia from retention and decomposition of the placenta. I have seen pyæmic complications follow such cases, and have found reason to doubt whether any hard and fast line exists between sapræmia and septicæmia. A case may begin as sapræmia and end as pyæmia. The following case, from my notebook, is in point:

Mrs. F., Hampton, N. H., aged 30 years, was delivered of a dead fœtus at the end of the fourth month, May 1, 1889. Was seen by Dr. Fellows, of Seabrook, on the 7th, who found a marked febrile condition, tender abdomen, considerable prostration, but regarded it as a case of sapræmia. He removed a putrid placenta. This patient was living in a retired country place; the surroundings were as healthy as could be imagined; all ordinary causes of infection were excluded; the sister of the patient was alone with her during her miscarriage.

On the 15th I saw Mrs. F. along with Dr. Fellows. She had had a series of chills; there was fever of marked hectic or remittent character; great nervous prostration; pulse 140 per minute. I opened a large abscess on the back of the arm above the left elbow, giving vent to a pint or more of foul pus. There seemed to be another abscess forming in the left thigh; left knee swollen and painful. There was an offensive ichorous discharge from vagina. I recommended a hot sublimate douche — 1 to 2000 — every morning, and the application after the douche of a crayon of iodoform, 20 grains, to be passed up to the fundus and left there. Gave the douche and applied the crayon before leaving the house. Prognosis unfavorable.

May 20.—Again visited Mrs. F. with Dr. Fellows. Condition not improved. Opened an immense abscess at the upper part of the thigh, giving issue to most fetid pus. Put in a rubber drainage-tube. There seemed to be an abscess forming in the vagina. Temperature still high, ranging from 101° to 104° F. Pulse 140 per minute. Nervousness and pain required sulph. morph., ¼-grain, every six hours. Patient was taking large doses of tinct. ferri chloridi with sulph. quinine, 20 drops of the iron tincture, and 5 grains quinine, every four hours. This treatment was continued by Dr. Fellows for nearly four weeks. Eggs and milk, brandy, beef peptonoids, meat juice, and other nutrients were freely administered.

The abscess in the thigh kept discharging for several weeks.

The swelling in the left knee subsided without suppuration.

The abscess in the vagina was in due time opened by Dr. Fellows. The condition of this patient long continued critical, but she eventually made a perfect recovery.

The diagnosis of septicæmia having been made, the leading indications are—

1. To prevent any further absorption of poison by the lymphatics and veins of the genital passages.

2. To relieve pain, nervous perturbation, and shock.

3. To aid the natural forces in the contest with the enemy.

4. To combat fever, and meet other symptoms and complications that may arise.

When the disease is declared, douches and ablutions cannot, of course, do the good that is expected of them in simple sapræmia, and may not be needed at all. If, however, there is any fetor in the discharges, and any reason to believe that the uterus and vagina are still the breeding-places of septic organisms, the irrigations should still be practised twice a day. A vaginal injection is always harmless, and if the lochia are suppressed, the hot douche may favor their return. Intrauterine douches may do serious harm, and should not be resorted to unless there is decomposing *débris* to be removed. All danger may be avoided by using (as Dr. T. G. Thomas advises) a large injecting-tube, which cannot enter an open-mouthed sinus (and, I may add, that, if there be no orifice on the end of the tube, and the fluid be made to issue from minute orifices on the sides, all the better); by using water warmed to 105° F.; by injecting the fluid through the tube so as to exclude air before passing this up to the os uteri; and by making the injection cautiously and with great gentleness. The os uteri ought to be patulous, so as to allow the injected fluid speedily to flow back; in the event of its being contracted and closely hugging the canula, it should previously be dilated by some mechanical means. A fountain syringe, which gives a continuous stream, is preferable to a Davidson syringe.

Cases of pyæmia and septicæmia, says Matthews Duncan, are to be managed rather than treated. We cannot arrest or even moderate the storm, but we may guide the bark through it.

An important indication is to relieve and nervous disturbance. For this there is nothing better than a hypode injection of morphine. The ⅛ grain triturates of the manufacturing pharma are convenient for this purpose; or Ma die's solution may be used, which contain grains sulphate morphine to an ounce distilled water—10 drops of this solutio enough for an injection in ordinary ca The hypodermic may have to be repe twice or three times a day. Where the a complication of peritonitis, the pain formidable symptom, and must be kept abeyance by frequent large doses of opi My own custom has been to begin wit subcutaneous morphine injection, and keep up the effect by grain doses of s opium given by mouth. I have seen c where 2 grains every hour were barely ficient to control the pain, but quanti much larger than this have been given impunity.*

In the pyæmic variety there is rarely se pain, and opiates are of little use, and often be omitted altogether.

The third indication is to aid the nat forces in the contest with the enemy.

The puerperal fever patient is a per whose constitutional powers have been paired by various causes which have dered her susceptible to septic agenc She is, moreover, still further depressed the multiplying virus in her system, and "antiphlogistic" or spoliative treatment wo be eminently improper. While blood-lett is not to be thought of, active purging, a view to elimination, is not justifiable. I only where there is constipation and fa accumulation that purgatives are requi and then mild laxatives should be chosen cascara sagrada, castor oil, castor oil calomel (an ounce of the former to five gr of the latter, rubbed up with twenty grains bicarbonate of sodium).† The occurrence a diarrhœa (whether accidental or provoke where there is peritoneal inflammation, is jurious rather than salutary, and is not to encouraged. Milk, beef tea, beef pepto wine, and other alcoholic stimulants are be regularly administered. Quinine in pre

* Thus, a patient of Professor Alonzo Clark took equivalent of nine hundred and thirty-four grains opium in four days; and one of Lusk's, at the ternity, the equivalent of over seventeen hun grains of opium in seven days (Lusk's "Midwife p. 645).

† Fordyce Barker.

large doses is believed to promote tone and arrest destructive metamorphosis; these large doses are also needed for antipyretic effect. The tincture of chloride of iron has considerable reputation as an internal antiseptic; it is much given in diphtheria, erysipelas, and surgical septicæmia, and seems to be especially valuable in purulent infection. The larger the doses that can be borne the better; 20 drops every two hours freely diluted, with five grains of quinine in capsule, would not be overdosing in malignant septicæmia. In the case above reported this quantity (one drachm quiniæ sulph., four fluidrachms tinctura ferri chloridi, in divided doses daily) was borne for many days, and the attending physician was inclined to impute the recovery of the patient largely to this medication.

But, unfortunately, many patients cannot take these doses, nor will the irritable stomach bear the nourishment that is required. The physician may be compelled to resort to ice, iced champagne, bismuth, and hydrocyanic acid to allay vomiting, and the patient must be fed with liquid nourishment by the teaspoonful every few minutes till such time as the rebellious stomach will accept more food.

Febrile symptoms are best met by antipyrin in 10-grain doses every two hours, or by acetanilid or phenacetin in 5-grain doses till the temperature falls to some point near the normal. Quinine, in the same dose, may be the preferable antipyretic, especially when there are chills and sweating, announcing the presence of pus. Thomas advises to give 15 grains of quinine night and morning, or salicylate of sodium in full doses.

Abscesses are to be freely opened, and if necessary to give vent to matter, one or more drainage-tubes should be inserted.

In cases of peritonitis, flannels wrung out of hot water, turpentine stupes, or linseed poultices, are always useful.

Puerperal mastitis and phlegmasia alba dolens are to be treated on general principles.

I had intended to append notes of several cases occurring in my own practice. They are, however, records of past neglect and ignorance rather than illustrations of antiseptic midwifery. There are some thick heads through which a new, fertile idea works its way slowly and painfully; I think that mine is one of that kind. But this paper has already exceeded a reasonable length.

NOTES ON EUPHORBIA PILULIFERA.

By Rosecrans Workman, M.D., Keyser, W. Va.

THE natural order Euphorbiaceæ belongs to the class of exogenous plants, and is represented by herbs, shrubs, and trees. Acrid and deleterious properties pervade this large order, chiefly resident in the milky juice. But the starchy accumulations in the rhizoma, as in the cassava of tropical America, are innocuous when freed from their poisonous juice by washing and heating. The starch thus obtained is the cassava, which, when granulated, forms the tapioca of commerce.

The fixed oil it frequently contains is bland, but the oil procured by expression abounds in the embryo of the seeds, and contains active properties. Some plants of the family are virulent poisons, as the *Hippomane manicella* of the West Indies. A drop of the juice blisters the skin, and it is said even to destroy persons who sleep under its shade. The *Ricinus communis* and *Croton tiglium* belong to this order. The principal genus in northern temperate climes is Euphorbia. These plants are distinguished by having the three-lobed ovary raised out of the cup on a curved stalk, its three short, two cleft styles making six stigmas. The fruit, when mature, bursts into the three carpels, which split into two valves each, thus discharging the seed.

The drug referred to is obtained from a species of this genus,—*E. pilulifera*.

I have notes of twenty-seven cases in which the drug was given. In thirteen cases of hay asthma, prompt relief was obtained in nine. The sneezing and discharge was diminished or stopped, and the congested sensation relieved. In one of the other cases partial relief was obtained, and in the remaining three cases the results were negative.

The fluid extract was administered in doses of 30 to 60 minims every four hours. In nearly all the above cases iodide of potassium and arsenic had been previously used.

In nine cases of coryza good results were obtained in six, the sneezing and rhinal flow ceasing or diminishing within thirty-six hours after the administration of the drug was begun. The doses were repeated every three or four hours.

In five cases of asthma, of frequent recurrence and long standing, marked relief was experienced in one case, the dyspnœa soon disappeared, and the attacks were always

shortened. In the other four cases no good effects were obtained.

I have given it in a number of cases besides the above, and mainly with good results, though I have no notes of them. I have not tried it in cases of bronchitis, but think from its action that it would be applicable. It has a sedative effect on the mucous membranes of the nose and throat, and in many cases diminishes the discharge of mucus from these surfaces.

---

*TOXIC EFFECTS FOLLOWING THE APPLICATION OF EMPLASTRUM CANTHARIDIS.**

By Frank C. Bressler, M.D., Baltimore, Md.

On Sunday morning, April 27, 1890, about four o'clock, I was asked to see a patient who was suffering with severe abdominal pains, and at the same time unable to hold his water. On reaching his bedside, I found the patient a strong, robust German, about 33 years old, suffering terribly with cramps in the lower part of his stomach, vesical tenesmus, and violent pains in his back. I immediately questioned him as to whether he was taking any medicine internally, or if he had used any locally, to which he replied in the negative. Knowing him to suffer with chronic synovitis of his knee-joint, I asked him whether he had applied anything to it, to which he replied that he had been to a physician on the day previous, who ordered him two plasters of Spanish fly for his joint. These were each about six by four inches; they were to be kept on for fourteen hours. Upon examining his joint I found two immense blisters, one on each side of his knee. The one on the outer side measured about six by three and a half inches; the inner one, five by three and a quarter. In addition to these two large ones, I found a smaller one, one by two, in the popliteal space, which, however, had drawn a moderate blister. In response to inquiry, he gave me the following history: On the evening before, about 5 P.M. (Saturday), he applied the plaster as directed by the doctor. In about a half-hour later his knee felt as if it was on fire. This sensation kept up without any intermission until 10 P.M., when all at once the knee stopped paining, and from that time on no more pain was observed in his knee. About this time it was noticed that a frequent desire to urin peared, so that it was necessary to mi every five minutes. At first each eff attended by a teaspoonful, but gradu grew less, so that it finally came in At first little pain was noticed with the of urination, but gradually it began more painful until it became violent. pains at first were confined to the bl At twelve, midnight, it was noticed th water was becoming mixed with bl flakes. The blood increased in amo that the urine seemed to be mostly all Strangury well marked. To this was nausea, with two vomiting spells. symptoms kept up with increasing e About 1 A.M. the pain over the bladd gan to spread, so that the whole ab became involved. The pains, in pl being of a paroxysmal character, becam stant and greater. Now the back be pain, which pain became so great that t tient's cries brought in the neighbors. was about 4 A.M. These various pain up without intermission until 6 A.M., the back became somewhat easier. A A.M. the patient's condition is as fo Face pale and haggard, showing tra great suffering; pulse full and rapid. plains of terrible pains over his ki The pain is constant, with exacerb every five minutes. When these exa tions occur he cries out loudly. Thirst and constant; mouth and throat dry pressure over his kidneys, flinches and plains of great pain. Abdomen pain that the least touch produces marked Priapism moderate, but says that no p discomfort is experienced. Urine b mixed with flakes of coagulated Upon standing, urine solidifies like g Vesical tenesmus great, and passes drops of urine every few seconds. Mo sulph. ¼-grain every half-hour was o until one grain had been taken, with relief to pains. The plasters were im ately removed; surface of skin ca cleansed of all remaining particles o tharides, first by soap-water, next by ab alcohol. After this the blisters were p with a needle. The quantity of seru considerable, amounting at least to on a half to two ounces of serum for each larger blisters. Cloths wrung out i water were ordered to be applied t renal regions every ten minutes. Mo was administered cautiously. Patien encouraged to drink plenty of water

* Read before the Medical and Surgical Society, Baltimore, Md., May 1, 189c.

der to hasten diuresis, liq. ammonii acet., lf-ounce doses every hour, was ordered. ughout the balance of the day the pains ined very severe and constant; the urine ined bloody.

aw him again on Monday, 11 A.M., when ported that last night (Sunday) he began ve severe pains over his left kidney, previously the right one seemed the painful. The pain was very severe, exacerbations, one of these lasting one during which the pain was excruciating. pains gradually subsided until 3 A.M., another attack was experienced, this g but a half-hour. I found him suffer- ery much with his back, pain in the er, bloody urine; the strangury, how- was much less than yesterday; temper- 99°; pulse good and full; thirst great; omited once in the morning; pains in men better; his condition was markedly oved.

esday found him decidedly better; urine bloody; vesical tenesmus much dimin- ; says his back feels as if some one had ed it; abdomen very little painful, and s nearly a normal amount of urine.

om this day on he has steadily improved, g no further trouble with his bladder; rine is not bloody, and no albumen can tected. The only complaint he suffers is a diffuse pain in his abdomen. In of this heroic treatment, his joint still ins as of old. This case, then, proves mportance that doctors who handle dan- s drugs must be careful to explain ex- ly to patients what must be done if any ward symptoms arise. Had this patient properly instructed that in case he finds he must pass water often, and particu- if attended with pain, to remove the ers immediately, all this poor fellow's could have been spared. As it was, this man had a congestion of the kidneys in- d, which may be the point of departure ome future kidney-trouble. If, however, patient had had a subdued Bright's dis- , the occurrence of this intense congestion t have led to serious results.

nother point of importance is whether it fe and advisable to order plasters of large composed of drugs which, when ab- ed, might be likely to induce toxic symp- s. In this case we find that the combined ters equalled an area of forty-eight inches. these were to be left on from fourteen ighteen hours. I think it not safe to w so dangerous a drug as cantharides to remain for this length of time upon the person of an uninformed patient, since individual peculiarities are such that one patient may tolerate this amount for twenty to twenty-five hours, while another could not stand five hours without toxic symptoms. Therefore individual idiosyncrasies are not to be lost sight of.

Another point to be observed in ordering plasters is to specify precisely what you want. Upon examining these plasters I found them composed of the ceratum cantharidis spread on adhesive plaster, and, in spreading them, want of proper care in equally spreading the cerate had been observed in that it was much thicker in some places than in others; but the most important is the lack of judgment shown by the pharmacist in the quantity used. Enough cerate was spread on these plasters to make six in place of two. This seems to be the failing of a number of pharmacists, and it seems that they make no difference in the amount used whether toxic or not. In comparing the plasters' effect on the tissues, a contrast was apparent. The little plaster produced a blister without any irritation to the surrounding skin, while the home-made product irritated the whole neighborhood. I think it much safer to use the various plasters made by the numerous reliable manufacturers than to run the risk of some of our home-made plasters, in that the former are always of equal strength, easily gotten, and not so apt to produce toxic symptoms.

CASCARA IN SYPHILITIC ULCERATIONS.

By C. H. Haines, A.M., M.D., Auckland, N. Z.

I BELIEVE that cascara amarga is almost specific in the ulcerations of tertiary syphilis. The number of cases which I have had to treat is small, but the results have been so striking that they have convinced me of its efficacy. In the year 1883 a lady, married, presented herself to me for treatment, stating that she came at the instigation of friends, although she believed that her case was hopeless, as she had had the advice of many physicians and taken a host of patent medicines. She was suffering from what she believed to be rheumatic pains in the limbs and head. I learned, among other things, that her pains were much worse at night. I could not for obvious reasons make very close inquiries, but found sufficient history to cause me to suspect syphilis. I treated her with iodide

of potassium. In a few days her husband came to inform me that her pains had disappeared, and that she had improved wonderfully. I obtained from him the fact that he had had syphilis about ten years previously, but believed himself cured; that he had undergone a short course of specific treatment, which he left off when the primary chancre healed. He had had four healthy children by his wife. For the last two years her health had not been good, and she had been constantly suffering from "rheumatism." I urged a continuance of the iodide. Three months later she returned with the pains and nodes on the skin; these symptoms again yielded to the iodides. About nine months later she returned in a terribly cachectic state,—emaciated, skin of a pale earthy hue, the front of the left tibia was exposed, superficially necrosed, and the stench was horrible. The entire front of the bone between the epiphyses was bared, and sinuses extended down at either side. I treated her with tonics, iodides, iodoform, etc. Nothing did the least good, and she was failing rapidly. I at last determined to amputate as a last resource, but postponed the operation for a fortnight to enable her to pass a menstrual period. In the mean time I gave her some cascara amarga with iodide. She returned in a fortnight, and the change was marvellous. Within that short period her face had assumed the aspect of health. She had gained flesh, lost the cachexia, and had experienced a wonderful change in her sensations. The leg had also improved. All the fetor was gone, healthy granulations were springing up. The diseased flakes of bone were separating. All idea of amputation was gone. She steadily progressed until the supply of the drug ran out. All treatment with this exception remained as before, but progress ceased. It was nearly three months before a supply came to hand, and during that time she gradually failed. She incessantly importuned me to know when the drug would arrive. At last it came. Improvement at once set in, and in a short time she became perfectly well. I saw her on January 7, 1890. She was then in excellent health, and had never had a relapse. She has borne two healthy children since.

The marked instant improvement, the absolute standstill when the drug was of necessity withdrawn, and the start at once made on its re-exhibition, are remarkable evidences of its value in such cases. I have treated seven similar cases since with as good results. The last case within the past month was one of sloughing of palate and back of pharynx, in the hands of a brother practitioner. He had exhausted all orthodox treatment when I was called in. I recommended the fluid extract of cascara amarga with iodide. The results were brilliant. Within ten days sloughs, including half the velum palati, had separated, and the remaining parts were healed, with corresponding improvement in general health. In secondary syphilis I have seen no good follow its exhibition. Its field in syphilis seems to be in the tertiary manifestations with marked cachexia,—cases where mercury could not be given, and where the depressing effect of iodides in other combinations would be dreaded.

If my experience be confirmed in the hands of others, cascara amarga may well rank as a real specific in tertiary syphilis, and much gratitude is due to Messrs. Parke, Davis & Co. for its introduction.

CONSTIPATION: ITS NATURE AND TREATMENT.

By C. L. Dodge, M.D., Kingston, N. Y.

SOME writers make a distinction between constipation and costiveness. This is unnecessary refinement, and serves no good purpose. We understand by either term insufficiency of evacuations from the bowels.

The affection is apt to become chronic; it is then termed habitual constipation. Reference is had in this article to this form of the disorder. Occasional constipation requires only a brief notice.

Constipation as a functional disorder is extremely frequent. "It is probably one of the most common of the slight derangements to which civilized man is subject. Whether savages suffer from it, I do not know, but unquestionably the majority of persons forming a civilized community experience the discomfort" (Beale).*

Various causes give rise to this affection. "Deficiency of bile and the intestinal secretions may enter into the causation in some cases, but probably the importance of this cause of constipation has been overestimated. Constipation is not always present when no bile enters the alimentary canal in certain cases of jaundice" (Flint).† Sedentary habits

* "Slight Ailments," p. 111.

† "Practice of Medicine," p. 470.

also stated to be a frequent cause. Inat-
on to the calls of nature is an important
r in the cause of this affection, as it be-
a tolerance on the part of the lower
l, so that a large accumulation of excre-
itious material may take place without
g any annoyance to the patient. This
mulation gives rise to overdistention and
lysis of the muscular coat of the intes-
, and in this way a chronic condition is
blished.

Constipation is said to be a cause of piles.
ink the converse equally true; defecation
g painful, it is deferred as long as possi-
, and one condition reacts on the other.
Van Buren says,* "The individual who
straining to get rid of the contents of his
e bowel is not aware of the damage he is
g to the parts which he is subjecting to
ence, and how surely he is courting pro-
s or piles, if not abscess or fistula. In
egarding the calls of nature few persons
ognize the danger they incur of loss of
pulsive power from overdistention and con-
uent costiveness from atony, of inflamma-
, stricture, and abscess.

"Let us glance for a moment at what anat-
y teaches us of this. The muscular coat
the rectum consists of a layer of internal
es which circle around the gut, and a
r of external fibres which run in the di-
ion of its length. The circular fibres
w larger and more powerful as they ap-
ach the lower end of the bowel, and just
ve the external sphincter muscle they are
lected into a mass of some volume, to
ich the name of *internal sphincter* is given.
large proportion of the external longitudi-
l fibres, when they reach this ring, double
ound its lower border, passing upward and
ard to seek an insertion into the fibrous
stratum of the mucous membrane of the
, where they are firmly implanted. From
s arrangement it results that, when, in the
of defecation, these longitudinal fibres
ntract, they tend first to draw down and
en to evert the mucous membrane of the
wer end of the rectum; just what we see
ppen in the horse. When the evacuation
the contents of the bowel takes place nat-
ally, this protrusion is promptly retracted
the action of the *levatores* and the natural
ntractility of the parts; but when the evac-
tion is difficult or impossible, and the effort
prolonged or frequently repeated, the pro-
uded mucous membrane becomes congested
and swollen, and is retracted with more diffi-
culty. Perhaps a portion of it remains out-
side, and then the tumid and tender protru-
sion leads to the announcement on the part
of the patient that he has 'an attack of
piles.'"

Dr. Squibb† maintains "that insufficient
supply of water or of succulent food is prob-
ably the ultimate cause of three-fourths of the
cases of ordinary constipation." There also
seems to be a predisposition to this affection
on the part of some persons from childhood;
indeed, we frequently meet with it in early in-
fancy. The various causes enumerated are,
doubtless, operative to a greater or less ex-
tent; but I believe that in a large number of
cases, especially where the affection has ex-
isted from childhood, as is frequently the
case, there is an inherent weakness of the
muscular coat of the rectum.

The so-called therapeutic test is sometimes
a valuable aid in diagnosis, as in obscure
cases of syphilis or malarial poisoning. The
therapeutic test will aid us in arriving at the
true cause of many cases of constipation.
Aloes in minute doses, as will be shown when
the treatment is under consideration, suffices
not only to relieve, but to cure this affection
in very many instances. The effect of aloes
in small doses, as is well known, is to stimu-
late the lower bowel, especially the rectum.
It excites intestinal secretion and increases
peristalsis, and thus restores this portion of
the intestinal tract to functional activity.
This would seem to prove a previous condi-
tion of weakness, atony, or loss of function of
the rectum. If this condition be relieved, the
constipation in the majority of cases is cured.

Constipation is regarded by the laity as a
slight ailment, and the average layman labors
under the delusion that he is abundantly qual-
ified to treat himself without the aid of a
physician. In proof of this, witness the im-
mense sale of nostrums designed to act on the
bowels, and the vast fortunes amassed by pill
manufacturers, from Brandreth down. Nine
times out of ten the medicine is taken in pur-
gative doses, which, causing a reaction, has
to be repeated from time to time, until the
individual is obliged to resort to a strong
cathartic whenever a passage of the bowels is
desired. Cases of this kind are the most dif-
ficult to treat, and they are very numerous.

The more unsatisfactory the treatment of
a given disease, the more numerous will be
the remedies therefor. The materia medica

* "Diseases of the Rectum," p. 400.

† *Ephemeris of Materia Medica*, May, 1884.

has been ransacked for remedies for constipation. To enumerate them all would require a small volume. I shall content myself by referring to the more important ones only.

Seidlitz powders, citrate of magnesium, and salts are household remedies. Pills* of all kinds, the composition of which is not known, are swallowed by the thousand, showing the extreme prevalence of this disorder. Mineral waters are largely used, and the sales thereof are increasing every year.

Dr. Squibb believes that plenty of plain water is all that is necessary to effect a cure. He says,† "The very common relief obtained in constipation from the use of the fashionable mineral waters is, doubtless, largely due to the water. As a large proportion of the effective mineral waters contain less than one-half of one per cent. of total solids, it is not difficult to understand that the water is an important, if not the most important, element; while it is very certain that water alone will answer an excellent purpose in the management of constipation."

Powerful purgatives are frequently resorted to; these give temporary relief, but are in no sense curative; the reaction which follows their use intensifies the existing condition. Some persons carry a piece of rhubarb root with them, and eat a little of this occasionally. "Of all agents to be selected for an habitual purgative this is the worst. If once resorted to, its use is necessitated, in consequence of its secondary action, which is to cause constipation" (J. Milner Fothergill).‡ This is more especially the case when the root is carried in the pocket and a small portion eaten occasionally; it soon becomes as necessary as the breakfast or dinner.

The compound licorice powder, the basis of which is senna, has now become a standard remedy for popular use. It is prompt, certain, and quite agreeable, and for children is an excellent combination.

Cascara sagrada is highly spoken of by some practitioners; the fluid extract is extremely bitter, but the elixir and the co of cascara are eligible preparations, a have found them of service in a numb cases, especially with children.

The mineral waters vary greatly in t cathartic properties. Some, as Congress Hathorn (Saratoga), are only slightly aper requiring several glasses to cause the bo to act; others, like Friedrichshall and H yadi Janos, are strongly purgative, one gl ful, or even less, taken in the morning, cau prompt and free catharsis. These waters quite bitter, however, and to some per objectionable on this account.

In addition to the above measures, l treatment is sometimes advisable; by th mean the use of suppositories and injecti These aim at producing an immediate ev uation of the bowel, but are in no se curative, as they do not tend to promot more regular action in future, which is chief end desired. Injections of cold w are resorted to by many persons for the lief of constipation, but it soon beco necessary to repeat the operation ev day, and, if persisted in for a long ti the muscular coat of the bowel beco weakened, and the condition is actu made worse. This method of treatmen not to be recommended in chronic ca Authority is not wanting in support of t opinion.

Suppositories are also used, especially gl erin suppositories. These are easily int duced into the rectum, and, if retained few minutes, will cause a thorough evac tion of the lower bowel. In children I f it extremely difficult to prevent the exp sion of the suppository before suffici glycerin has been dissolved to excite p staltic action. Glycerin is quite irritating persons suffering with piles, or where rectum is hypersensitive from any ca Before the introduction of glycerin supp tories I made use of suppositories cont ing ox-gall; one or two grains of powde ox-gall was put in a hollow supposito These were usually quite effective, but some cases slightly irritating to the rectum

The local measures described above more especially adapted to cases of occ sional constipation, such as result from change of diet. Free indulgence in m by those unaccustomed to its use is f quently followed by severe constipati This condition may exist for several d without causing serious inconvenience, w suddenly relief becomes imperative. In

* Crittenton's "Catalogue of Patent Medicines" contains over three hundred different kinds of cathartic pills,—that is to say, over three hundred manufacturers are engaged in the laudable occupation of furnishing physic pure and simple to their suffering countrymen. Bitters, to the number of a hundred and fifty or more varieties, are also supplied, most of which are warranted to regulate the bowels, as well as to cure various other ailments.

† *Ephemeris of Materia Medica*, May, 1884.

‡ "Handbook of Treatment," p. 419.

like this it would be worse than folly ait for the slow action of physic; im- iate relief is demanded. Here copious tions of soap and water, or the use of erin suppositories, would be the most nal treatment.

f all the remedies for the cure of consti- on, aloes deserves the first rank. Most he old writers, and some recent ones, tell hat aloes frequently causes hemorrhoids, aggravates them when already existing. is a tradition that has come down from fathers, and is utterly without founda- Given in the large doses that were erly advised, it is no wonder that e hemorrhoids existed they should be e worse. Any powerful purgative is raindicated in such cases. Fordyce er says,* "It would seem, therefore, the use of aloes for the cure of hemor- ds in pregnant women would have been ested by *a priori* reasoning, but I am not e from anything I have read that it ever been. I suppose that the general im- sion that aloes is contraindicated where is any tendency to piles, and that it pos- s emmenagogue properties, has had great ence in preventing this. In my own case se of aloes for this purpose was the re- of gradually accumulating observation r than from any reasoning on the sub- ." I have prescribed aloes in small s for patients suffering from piles time again, and have never known of any un- sant effects following its use. "The charge ght against aloes of producing piles is borne out by my experience" (Foth- ll). In truth, given in proper amount, it far the best remedy that we possess for tipation associated with hemorrhoids.† hermore, the habitual use of aloes does sensibly affect its activity. It has been tiously said, *Qui vult vivere annos noe, nat pilulas de aloa.* M. Audhoui‡ con- rs aloes the typical laxative. He further arks, "That aloes taken in sufficient dose food excites the flow of mucus in the stive tract, increases the secretion of the ds, provokes the contraction of the mus- cular tunic, and that with order, with mod- eration, without causing the least malaise."

This last attribute of aloes, whereby the bowels may be acted on thoroughly, gently, and with the nearest approach to a natural movement of any known drug, and without causing the slightest degree of nausea, is the one which commends it most strongly.

The dose of aloes is an important matter. The amount advised in the text-books on materia medica, of 5 to 10 grains, is entirely too large.

Professor Wallace taught years ago that fractional doses of aloes would cure constipation where large doses would fail. He used to tell us to begin with 2-grain pills, and give one at bedtime for a week; then cut these pills in two, or substitute 1-grain pills, and continue with these for another week, and thus continue to subdivide until the patient was taking only ½ or ¼ of a grain once or twice a day.

I followed this plan for several years with success, but since the appearance on the market of granules of aloin.§ the active principle of aloes, I have made use of them, on account of the smaller dose required. As in the case of aloes, the dose laid down in the standard works for aloin is also too large. 1 to 3 grains is more than is ever required for cases of the kind under consideration.

The granules referred to are made from $\frac{1}{10}$ to ½ grain in size. The method of administration constitutes an important part of the treatment. I first order a blue pill, to be followed by a saline, which opens the bowels and makes a good beginning, after which I direct the patient to take two granules of aloin ($\frac{1}{10}$ grain) three times a day, after meals, for a week. If two are not sufficient, three or four may be taken at a time. The following week two granules are to be taken twice a day for a week. After a time—which varies in different cases—it will be found that two granules, taken once a day, preferably at bedtime, will be amply sufficient to secure a perfectly natural movement of the bowels. After finding by experience in individual

* "Puerperal Diseases," p. 33.

† "The general belief that aloes tends to produce orrhoids is contraindicated by the results of experi- ; these bodies probably arise from the constipation h aloes is given to relieve" (Stillé).—"National ensatory," p. 159.

‡ "Thérapeutique Contemporaine," quoted in *Journal Médecine et de Chirurgie*, September, 1881, p. 418.

§ Aloin may be prepared by W. A. Tilden's process, as follows: 1 part of aloes is dissolved in 10 parts of boiling water, acidulated with hydrochloric acid, and allowed to cool. The liquid is then decanted from the resinous matter, evaporated to about 2 parts, and set aside for two weeks for crystals to form, the liquid portion is poured off, the crystals pressed, and the adherent resinous matter separated by shaking with acetic ether, which dissolves the resin.—"U. S. Dispensatory," p. 160, 16th ed.

cases the smallest amount that will cause the bowels to act, it is good practice to continue the medicine for several weeks or months for its curative effect.

There are also several combinations, such as aloin, ⅛ grain; belladonna, ⅛ grain; strychnine, $\frac{1}{60}$ grain,—this particular formula is very extensively used,—which are alleged to be superior in their action to aloin alone or uncombined. This very popular and much-vaunted formula is open to the following criticism: First, strychnine, in this amount, limited to a single dose, can have little, if any, effect on the peristaltic action of the bowels. The same is to be said of ¼ grain doses of belladonna. Further than this, these granules are not free from danger when taken *ad libitum*, as they practically are. Several cases of poisoning are on record from strychnine pills, or rather granules, and these are capable of causing the same mischief.

I have long since ceased to employ anything but the aloin itself, uncombined with anything else, for the following reasons: In the first place, after careful comparison, I fail to see that the addition of belladonna or strychnine to the aloin increases its purgative effect, the same amount of aloin alone giving equally good results. This I have demonstrated time and again, frequently on the same subject. Certainly there is no good reason for dosing a patient for a long time with powerful drugs like these, if the same results can be obtained without them.

Dyspepsia is sometimes associated with constipation, but not nearly so often as it is alleged to be. In those cases where indigestion is present, nux vomica can be used in the form of the tincture, giving a large or small dose, as the case seems to require. Other remedies appropriate to the case may also be added. In this way the constipation can be treated much more satisfactorily, both to patient and physician, than by attempting to combine all the remedies that may be indicated in one prescription.

THE CORTICAL MOTOR CENTRE OF THE LARYNX.

Dr. J. Garel and Dr. Dor have recently observed a case which is especially interesting as offering an affirmative answer to the question so long the subject of controversy as to the existence of a cortical motor centre for the larynx. The case is reported in full in the *Journal of Laryngology and Rhinology* for May, 1890, being that of a man suffe from ulcerative endocarditis with pericard who, three days before his admission to hospital, had been suddenly attacked w aphonia. On examination, apart from cardiac symptoms, pulmonary œdema, there was noted complete paralysis of left vocal cord. Any other traces of para sis were absent, and the case was, therefo one of pure laryngeal paraplegia. The p tient died three days later, and at the topsy there was found in the right he sphere a small centre of softening, triangu in shape, and occupying the upper inter part of the lenticular nucleus, and extendi slightly on to the external part of the int nal capsule. The author concluded from examination of these cases, as well as fr the records of numerous experiments that—

1. There exists a cortical motor centre the larynx in each cerebral hemisphere.

2. This centre is located at the foot of third frontal convolution on the fissure wh separates it from the ascending frontal.

3. The fibres originating from this cen pass to the level of the external part of knee of the internal capsule, forming in geniculate fasciculus a motor laryngeal f ciculus, independent of the fasciculus aphasia and the hypoglossal fasciculus.

4. The laryngeal centre has a crossed tion. Its destruction determines total para sis of the vocal cord of the opposite si (cadavaric position).

CUBEBIC ACID IN GONORRHŒA.

Officinal cubebs contain cubebic acid, ethereal oil called cubebene, and an indiffe ent body, to which the name of cubebin h been given. Cubebic acid is a whitish su stance, resembling wax, which becomes d colored brown when exposed to the air, a is very soluble in alcohol and ether.

According to Bernatzik (*Journal de Méd cine de Paris*, June 1, 1890) the antiblenn rhagic action of cubebs is principally due the presence of cubebic acid. Therefore t administration of cubebic acid alone, accor ing to the author, will produce more reliab results and a more certain cure.

The maximum dose, according to Ann and Voromikin is 15 grains, while no mo than seventy-five grains should be given twenty-four hours.

e Therapeutic Gazette

EDITED BY

ROBERT MEADE SMITH, A.M., M.D.,
r of Comparative Physiology, University of Pennsylvania,
PHILADELPHIA.

GEO. S. DAVIS,
Medical Publisher, Box 470,
DETROIT, MICH.
, 714 Filbert Street.

SUBSCRIPTION RATES FOR 1890.
(Journal increased to 72 pages each month.)
APEUTIC GAZETTE (postage included).....$2.00
APEUTIC GAZETTE with MEDICAL AGE..... 2.50
APEUTIC GAZETTE with AMERICAN LANCET 3 25
APEUTIC GAZETTE with AGE and LANCET... 4.00

n subscriptions may be ordered through our agent in Eng-
r. H. K. Lewis, Medical Publisher and Bookseller, 136
Street, London. Price 10s. Remittances may be made
by Postal Order or Stamps.

to Foreign Subscribers direct (postage included), $2.50 (10
). English postage stamps received on remittances.

rial communications should be addressed 332 South Twenty-
eet, Philadelphia. Articles intended for the Original De-
t of the GAZETTE will be accepted only with the under-
g that they are contributed to it exclusively.

ess communications should be addressed to the Publishers.

Leading Articles.

E NARCOTIC ACTION OF CODEINE.

LTHOUGH codeine was discovered sixty years ago, and its valuable properties been fairly well recognized in France, re it was discovered, outside of this coun- but little attention has been paid to its able properties. We have recently re- d to several papers which point to the e of codeine as a substitute for morphine, the number of publications which further ngthen this position is rapidly growing. most recent is an article by Dr. Loew- neyer, who publishes in the *Deutsche dicinische Wochenschrift* for May 15, 1890, article based on the administration of five usand different doses of this remedy to r hundred different patients in the Jewish pital of Berlin.

The author starts with the claim that code- is analogous in chemical composition and ivity to morphine, although it possesses a s intense narcotic action, but as a balance this it is claimed to be absolutely free from favorable influences. The author's first class of investigations were based upon the recommendation of Dr. Lauder Brunton as to the value of codeine in various conditions of the abdominal and pelvic organs, accompanied by pain, such as gastralgia, colic, and pain located in the pelvis, without any recognizable anatomical cause, especially in visceral neuralgia. The author states that his success was in almost all cases satisfactory. Patients for hours after its administration were entirely free from pain, and were able to sleep even after the effects of the remedy had passed off. Renewed administration of the remedy, in the same dose as the previous one, likewise succeeded in producing a similar result.

So also in cases where the pain was evidently dependent upon marked anatomical alterations, such as gastric ulcer, cancer of the liver and intestine, or of the diaphragm; here also was the drug in many cases satisfactory, although it was by no means invariable. Of such cases the author refers to notes of at least one hundred, and of these, in ninety to ninety-five per cent., morphine was successful in relieving pain, while codeine only proved absolutely satisfactory in fifty to sixty per cent. of the cases. In attempting to explain the character of the cases in which codeine was without action, it appears that all cases in which the pain is paroxysmal in character and of great intensity, codeine will afford but little relief. It therefore failed in cases of biliary and renal colic and cases in which small doses of morphine had proved perfectly efficacious. Although this might seem to offer but slight recommendation for the use of codeine, it must, nevertheless, be recollected that codeine as claimed by the author is entirely free from any unfavorable action on the organism, and a remedy which is successful in more than half of such cases certainly does not deserve to be overlooked, especially since it must be recollected that such cases are ordinarily liable to numerous relapses, and therefore a prolonged treatment with narcotics is to be expected, and the constant use of morphine, it is hardly necessary to say, is extremely undesirable. And yet it must not be supposed that codeine is indicated in every case of abdominal pain, for the author calls attention to the fact that codeine is unsuitable for numerous cases of acute diffuse inflammation of the peritoneum. For there the indication is to arrest as much as possible the intestinal peristalsis, an action which is not possessed by codeine, which often appears to intensify intestinal

peristalsis. Such cases, therefore, fall within the domain of the action of opium. If, however, the acute symptoms have been overcome, and then, as is so often the case, pain still remains, codeine now assumes the position of the most reliable remedy; such, for example, as in the later stages of perityphlitis. Dr. Loewenmeyer also states that he has employed codeine with considerable success in a large number of cases of pain having their cause in the urino-genitals, ovarian pain being especially amenable to the action of this remedy.

It is in diseases of the thorax and diseases of the respiratory tract, however, in which the author becomes most enthusiastic in recommendation of codeine. In phthisis especially morphine is not to be compared with codeine as capable of removing the stitch in the side, the feeling of pressure in the chest, the dyspnœa, and the distressing painful cough which so frequently accompany these cases. The author adds that since he commenced to employ codeine in such cases morphine has been but rarely administered. So also in other affections of the respiratory tract, such as in pneumonia, bronchial catarrh, and pleurisy, codeine has been employed by the author with success. Pulmonary asthma also has proved amenable to its employment, and it has been found that the majority of these cases may take codeine for months at a time without any unfavorable effect or without any reduction in the intensity of its action. Heart-disease is claimed by the author to be no contraindication to its use, and even in cases of marked fatty heart it may be used with success. In cases of nerve-affection, however, such as organic disease of the brain and spinal cord or neuralgia of peripheral nerves, although codeine may, perhaps, fail to produce any effect upon the pain, it nevertheless has valuable properties, according to the author, as a hypnotic; and, even where insomnia is due to pain, relief may be confidently expected in the majority of cases from the use of codeine.

As regards the doses employed by the author, the single dose varied from ⅓ to ¾ of a grain, there being rarely any necessity for exceeding the latter dose, since the author states that where ¾ of a grain fails to produce relief an increase of the dose will rarely add to the efficacy of the remedy. The remedy was ordinarily given in powdered form in capsules or in solution sweetened with syrup to disguise the unpleasant taste.

Codeine unfortunately, however, c nearly three times as much as morph and nearly three times as large doses required, so that its use is, therefor somewhat costly experiment.

After all, perhaps, the strongest rec mendation for codeine, provided its narc properties be granted, is that it seems to free from any liability of establishing opium habit, and is, in fact, used by Schm (*Wiener Medizinische Presse*, 1889, No. 43 the treatment of morphinism.

Dr. Schmidt claims that when code is employed in cases of morphinism, craving for morphine is rapidly overco and that after a very short time the dose codeine may be rapidly reduced; and t while the treatment is being employed, symptoms, which would otherwise acc pany suppression of the use of morphine, absent.

Dr. Schmidt has in the majority of c employed the phosphate of codeine, and some cases of pronounced morphinism given as much as forty-five grains of phosphate of codeine in one day.

Fischer (*Journal de Médecine de Paris*, 26, 1890) recommends in the strongest te the use of the phosphate, especially given hy dermically. He employs a solution cont ing 15 grains of the phosphate of codein 320 minims of water, with $\frac{8}{10}$ of a grain of c bolic acid. Of this, about 15 minims may injected with a hypodermic syringe.

As in the case of so many other drugs, usefulness of codeine will greatly dep upon its mode of administration, and it sho be remembered that codeine, while solubl alcohol and ether, is almost insoluble in wa The average dose of codeine for an ad should be about ½ grain, and it may be ministered either in the form of powder, p capsules, or in syrup. If given in the fo of powder, it should be recollected that taste of codeine is almost as bitter as that morphine, and therefore its administrati in the form of pills, capsules, or syrups preferable. The best excipient for codei in making it into the pill form, is extract gentian and powdered licorice-root, fift grains of codeine being made into thirty pi The syrup of codeine is best employed wh the codeine is principally designed to reli cough. Where it is desired that code should enter into any watery preparati the hydrochlorate sulphate or phosph should be chosen on account of their grea solubility, while the phosphate is best

cutaneous application, as it dissolves in 4 s of water, and so administered rarely luces an irritation. Where so employed, commended in the *Journal de Médecine Paris* for June 15, 1890, a little carbolic should be combined with it.

NTAL OVERWORK IN MODERN LIFE.

OUBTLESS the age in which we live is peculiar, in the sense that multitudes bliged to toil harder with their brains than previous race. Never before, perhaps, he history of mankind did arduous strife competition, involving the higher nervous gies, become so necessary. The present eration is the heir to all the acquisitions he past, but these have been an ever-ac-ulating burden, which is almost too great the strong to bear, while the weak and austed must succumb beneath the load, gh the latter be no more than just suffi-t to equip its possessor for a fair chance he struggle for existence.

t has been said a hundred times, and can-too much be reiterated, that many of the ditions of our modern life are unfavor-e to the best physical and mental develop-t; that a sedentary life stunts and dwarfs muscular powers, while constant study, hout physical exercise, dwarfs and dulls intellect; that overwork of every kind austs the organs and tissues concerned in overwork; that the fruits of over-ooling and intense competitive examina-s are seen everywhere in the neuras-nia and premature decay of the present eration.

t has been proved, however, that hard dy can be borne with impunity, provided sufficient physical exercise be taken. is is a truth which the literary man and student should ever have in mind. We e a good instance of this in the life of the Frenchman, Littré, one of the most inde-igable literary workers of this age. His bit was to spend most of the day out of ors in physical recreation and in exercise; d he only began his studies and his writing out seven o'clock in the evening, when he uld enter his library and pore over his oks, absorbed in study, or bend over his iting-desk, working without cessation, till ee or four o'clock in the morning, when, elding to fatigue, he would seek a few hours' freshing sleep.

It is well known that many of the most noted writers in the medical profession have been men who have diligently kept good their physical powers while performing an enormous amount of brain-work; we need only instance such professional lights as the late Dr. S. D. Gross, Dr. Austin Flint, Sir Thomas Watson.

At this season of the year, to business-men, students, and professional men, this advice is opportune, and, however trite, needs emphatic repetition. Take suitable vacations. Don't let the muscles become toneless and atrophied from disuse. Seek frequent occasions for breathing mountain air or sea air; leave the city and go to the country. The flagging mental powers are best rallied and quickened by change, recreation, and physical exercise.

Physicians above all others often feel that they cannot afford to go away from home for even a short vacation; but such economy is short-sighted and deplorable.

In a recent spirited publication,* Marie Manacéine, whom we may call the Mary Somerville of Russia, has traced the causes, effects, and remedies of mental overpressure in modern life. She lays great stress on the want of gymnastic training in schools and the numerous unhealthy conditions of our civilization. The besetting infirmities of the age are "cerebral anæmia" and "nervous exhaustion." The causes are complex, but they all act similarly,—"by producing irregularities in the vascular sphere;" *i.e.*, by impairing the tonus of the cerebral blood-vessels. "When once the tone of the blood-vessels is lost, when their nutrition is disturbed, and the circulation no longer responds to the exigencies of normal life, phenomena of dissolution begin to manifest themselves."

To this want of tone a variety of causes conduce,—the quality of the ingesta, excitement, worry, excessive application of mind, etc. Mlle. Manacéine regards the stimulants (tea, coffee, alcohol, tobacco, etc.) in which the people of the age are prone to indulge as being large factors in producing a toneless condition of the cerebral vessels; but exhaustion by overwork, and especially by worry, are doubtless still more important factors.

As remedial agents, besides avoidance of the causes, Mlle. Manacéine assigns great importance to gymnastic and other physical

---

* "Le Surmenage Mental dans la Civilisation Moderne." Translated from the Russian. Paris, 1890.

exercises, and to hydrotherapy. Cold douches and bladders of ice to the head have given some excellent results. Should the professional man drink wine, tea, and coffee? it is asked. There is scientific evidence that these beverages (and especially spirits), if taken in any excess, do favor arterial degenerations, or, at least, that cerebral plethora, which finally forces the tonus of the blood-vessels. Hence the proper counsel would be moderation or abstinence. The evils resulting from excess are undisputed. In this age of excitements and unrest there is an importunate demand for stimulants of all kinds, but he is the wisest and happiest man who can live calmly and at ease without them.

THE ALKALINE CACHEXIA; TREATMENT OF PSEUDO-GASTRALGIA DUE TO EXCESSIVE (HYDROCHLORIC) ACIDITY BY LARGE DOSES OF ALKALIES.

TROUSSEAU taught that alkalies, when their medicinal use is long continued, or when they are taken even for a brief period in enormous doses, impede the organic combustions, and produce a peculiar kind of cachexia called by him *the alkaline cachexia.* This doctrine has been confirmed by recent experimenters, as far as excessive doses are concerned, which, undoubtedly, have a "deglobulizing" action on the blood, while diminishing the proportion of urea in the urine and increasing that of uric acid. That, however, moderate doses, no matter how long continued, are pernicious, in the way that Trousseau maintained, has been disputed by Mealtre, Martin Damourette, Harley, and others, who affirm that alkalies are trophic agents, which energize nutrition, increase the figure of blood corpuscles, and augment the proportion of urea excreted. The waste of the organism is increased under their use, but, at the same time, a powerful impulse is given to assimilation; more food is demanded and appropriated; anæmic and cachectic states are really made better. "It is a mistake," says Martin Damourette, "to believe that the alkaline waters are debilitating and contraindicated in anæmia, for they are among the most active agents of reconstruction."

This view seemed to be sanctioned at the late meeting of the Société de Thérapeutique, and most of the participants in the discussion which followed the reading of Huchard's paper affirmed that they were believers in the administration of alkalies in the large doses recommended by that therapeutist.

The title of Huchard's paper was "Pseudo-Gastralgia from Hydrochloric Excess treated by Alkalies in Large Doses." It is known that there is a painful affection of the stomach, often assuming an intermittent gastralgic type, which is caused by excessive secretion of hydrochloric acid; this affection is generally accompanied by dilatation of the stomach. "It is," says Huchard, "dyspepsia by continuous secretion of hydrochloric acid (*pseudo-gastralgie hyperchlorhydrique*).

The pain is very apt to come on when the stomach is empty, and is relieved by albuminous food, by milk, and by alkalies. Among the symptoms are pyrosis, acid eructations, and attacks of neuralgiform pain, which are generally nocturnal.

Among the remedial measures proposed is the restricting of the patient to an azotin diet and to milk. Debove suggests the dry diet treatment. The patient should eat five light meals a day and drink little. The hyperacidity is combated by alkalies,—from half an ounce to an ounce of bicarbonate of sodium daily, in divided doses. Charcot gives from one to two ounces, but Huchard considers this dosing as excessive. Some authorities prefer a combination of sodium bicarbonate with prepared chalk, giving doses of 15 grains every hour after meals.

To combat the intestinal atony and constipation so common to this disease, laxatives as aloes, podophyllin, cascara sagrada, etc., are useful; all aliments of slow digestion and all fermented or distilled liquids are to be avoided, as being calculated to increase the gastric atony and dilatation.

At this meeting M. Labbé stated that the large doses of sodic bicarbonate were as applicable to cases where there was deficiency as to those where there was excess of hydrochloric acid. Dumas and Blondlot long since proved that the effect of the ingestion of bicarbonate of sodium was to promote the secretion of gastric juice, and, in particular, of hydrochloric acid. Trousseau, and later Gubler, made their patients take a glass of Vichy water a quarter of an hour before meals to excite the appetite and provoke an acid secretion.

Evidently, however, there is a great difference between giving alkalies in small doses to stimulate secretion, and in massive doses to neutralize acidity, and to this Huchard referred in his summing up.

his whole subject of hypersecretion of atural acid of the stomach needs eluci- g. The fact of the benefit conferred he alkaline medication is none the less owledged.

LOCARPINE IN CHRONIC ARTICULAR RHEUMATISM.

HE therapeutics of rheumatics is bounded by narrow lines; for while in acute rheu- ism in salicylate of sodium, antipyrin, l, and phenacetin we have remedies any of which is in many cases worthy of mendation, and enables us to treat the se quite as satisfactorily as is the case alaria or syphilis, in the chronic form little may be expected from them.

assage, from which, upon its first intro- tion, so much was expected, has likewise yielded the promised results, since in the ment of chronic rheumatism we have to not with the removal of a serous exuda- , but with the treatment of connective- ue contraction and hypertrophy, while e severe mechanical measures are contra- ated by the fact that irritation of the ts may result in inflammation and re- ed suffering. Besides, it should be re- bered that the muscles, which are the seat ontracture in this affection, rather tend to than to stretch on forcible extension, and empts in this direction may, therefore, re- in an entirely useless joint. The indica- s thus are, as a rule, incapable of fulfil- t, though a paper by Dr. Hochhalt, in the *rnationale Klinische Rundschau* for June 8, o, calls attention to a measure which he ms to be of the utmost value in the treat- nt of such cases.

About ten years ago, Dr. Colman Korda lled attention to the use of pilocarpine in es of chronic articular rheumatism, but statements appear to have attracted no ention, and we have met with no publica- n on the subject until Dr. Hochhalt pub- hed the results of his experience. Pilo- rpine, as is well known, produces great in- ease in the secretion of the salivary and eat glands, and leads to such increase in sue-change that organized exudation prod- cts of inflammation are dissolved, and re- lts of retrograde tissue metamorphosis are minated. As an illustration of the truth these statements, it is only necessary to all the value of pilocarpine in ophthalmo- ical practice, as in cases of opacity of the vitreous humor, or in iritis or irido-choroiditis, where it is especially serviceable in removing the products of inflammation. In diseases of the internal ear and in severe types of syphilis, and in dropsy of renal origin, it has recently been recommended by Von Ziemssen and Senator.

Dr. Hochhalt describes a case of chronic articular rheumatism, which seems to show that the use of pilocarpine is capable, to a certain extent, of relieving the less intense form of connective-tissue contraction, and to a certain extent of restoring the use of an affected joint. Of course, where the joints are bound down by old contractured muscles, or where the bone itself has become affected, but little may be expected, though the very fact that in certain cases relief may follow the use of pilocarpine is to be regarded as an important addition to our therapeutic measures.

THE PREVENTION OF THE TOXIC EFFECTS OF COCAINE.

THE great disadvantage attending the use of cocaine is that it sometimes, when least expected, produces serious or annoying toxic effects. It is a striking fact, however, that the local use of cocaine in the eye seems to be most free from these results, while its application to the ear, nose, and throat is often followed by alarming results. In the *New York Medical Record* for June 21, 1890, Dr. Isidor Gluck writes that the combination of cocaine with phenol does away with these risks without interfering with the anæsthetic properties of the cocaine. Dr. Gluck dissolves two drops of phenol in one drachm of distilled water, shaking until solution is perfect, and then adds ten grains of cocaine hydrochlorate.

The author states that he has been using this formula for over a year, and has since then, as yet, met with no instance where cocaine produced any toxic effect. He has been able to use it in any quantity, and in any part of the nose or throat, without the least fear of harmful consequences. Phenol, in the same manner as cocaine, by suspending the functions of the sensory nerves, is itself a local anæsthetic of no mean power, while the combined action intensifies the anæsthesia. Phenol also coagulates albumen, and combines with fats, forming a very superficial eschar, which prevents the rapid absorption of cocaine, and hence its toxic effect. Phenol is also destructive of bacteria, fungi,

etc., and prevents decomposition in the solution.

In conclusion, as results of this combination, Gluck claims the following advantages:

Toxic effects are prevented; the anæsthetic action is increased; it prevents congestive reaction and decomposition of the solution, and renders the solution aseptic.

The same principle has been also employed by Hummer, in Geneva, who has likewise recognized the fact that one of the chief dangers in the administration of cocaine is its extremely rapid absorption. He has recommended as a preliminary measure when local anæsthesia is to be produced for an operation by injection of cocaine, to first apply Esmarch's bandage, the anæmia so produced greatly retarding the rapidity of absorption, and hence the risk of toxic symptoms. Occasionally it will be found that symptoms of poisoning, after the administration of cocaine for this purpose, do not appear until some time after the operation. Hummer likewise explains this fact as attributable to the bloodless character of the operation, for, if bleeding is entirely prevented, there is no escape of the solution from the tissues; so that, therefore, after the operation has been completed, bleeding should be encouraged.

Reports on Therapeutic Progress.

DIAGNOSIS AND TREATMENT OF METRORRHAGIA.

At the meeting of the British Gynæcological Society, held May 28, 1890, Dr. Edis read a paper on the "Diagnosis and Treatment of Metrorrhagia" as an introduction to a discussion upon the subject (*Medical Press and Circular*, June 4, 1890). Alluding to the fact that the uterus was the only organ in the body from which blood flows as a physiological process, he showed how this function was influenced by many and various conditions, both general and local. A correct diagnosis as to the cause of any undue loss was the first and most important element of successful treatment. This could often be arrived at on the principle of diagnosis by exclusion, not forgetting the influence of diseases of the heart, liver, or kidneys. Some of the most difficult cases to deal with were the terminal floodings about the climateric period. The most frequent local causes were enumerated, and cases illustrating these were given. Where ordi remedies failed, the importance of explo the interior of the uterus was insisted u Removal of the ovaries in very intract cases might be requisite. The reliable r edies for checking uterine hemorrhage w mentioned, ergot being one of the most tent. Hydrastis in cases of myoma often of great service. Iron in suit cases was of much value, but needed crimination. The ordinary astringents, s as gallic or sulphuric acid, had really little influence in restraining hemorrh Quinine and strychnine would often succ in restraining hemorrhage where the sys was much depressed from repeated or p longed losses. Bromide of potassium cases of ovarian irritation was very use Cases illustrating the difficulties of diag sis and the methods of treatment were giv

Dr. Fancourt Barnes said that in large majority of the cases of metrorrhagia *i.e.*, cases where bleeding was going on c tinuously,—the hemorrhage was due to tained products of conception. He recen had two cases in one ward at the Che Hospital for Women. One was that of woman, aged 40, who had been losing nine or ten months continuously. She very anæmic, and was altogether in a v unsatisfactory condition. The cervix dilated by laminaria tents, and he curet the uterus by means of the finger, a meth which he always preferred when possib He removed a large mass of placental t sue, and the hemorrhage ceased, the pati making an uninterrupted recovery. Th was another patient in the same ward w practically the same history: she had be losing blood for eighteen months; her a was 30. He dilated the cervix in the us way and curetted as above. For two wee she was much better, but then the hemo rhage recurred so that he was obliged curette a second time, on that occasi using the blunt curette as well. She w again relieved, and he thought he had r moved all the placental tissue remaining the uterus. He was, however, deceived, f the hemorrhage recurred after a few week and she was so bad that in his absence D Edis had kindly seen the case, and had r moved what he considered to be the r mainder of the placenta. He, too, howeve was deceived. She had no more hemorrha to speak of for some time, but she deve oped symptoms of septicæmia, to which sh succumbed.

Post mortem.—They found another mass of placental tissue still remaining in the uterus. These two cases were extremely interesting, as showing that, like all operations, such a case might be easy or difficult. In reply to the President, he added that it was his invariable practice to wash out the uterus with a solution of iodine at the end of the operation, and to apply iodine to the interior of the cavity for a fortnight or so afterwards.

Dr. Mansell Moullin observed that though there was nothing very novel in the paper, the subject was one of such extreme importance that it was well for it to come under their consideration from time to time. He mentioned that he had met with several cases of hemorrhage in elderly women from 50 to 55, in whom the menopause ought to have taken place some years previously, and in whom periodical hemorrhage had been so profuse as to reduce them to an extreme state of anæmia and debility. In these cases the resemblance to malignant disease was very great. The uterus was usually in a condition of subinvolution, retroverted, and partially prolapsed. This probably kept up the congestion of the organ, preventing the atrophy which ought naturally to take place. The mucous membrane in these cases was probably in a large measure replaced by unhealthy granulation tissues. Another class of disease was where the symptoms were associated with the first appearance of the catamenia, which was sometimes attended by hemorrhage so profuse as even to cause death, though he had never seen such a case. If the symptoms were persistent and of an alarming nature they would have to be guided by the same rules as in other cases,—that is, anæsthesia, examination of the uterus, followed by suitable applications to the interior.

Dr. Hugh Fenton said the paper was a very fitting rider to that contributed by Dr. Lycett, and read at a previous meeting. This question of the diagnosis and treatment of metrorrhagia was a branch of gynæcology which was continually cropping up. He feared that it was often made a matter of treatment and not diagnosis in these cases of metrorrhagia, where everything depended on a full and complete examination not only per vaginam, but of all organs of the body. Some of the cases related by Dr. Edis showed how frequently perfectly preventable hemorrhage was allowed to go on for want of a proper examination in the first instance. He called attention to the cases of villous endometritis, where there was nothing to show for the hemorrhage. He asked Dr. Parsons whether he had treated any of these cases by electricity, and, if so, with what result? He mentioned two cases in which he had removed the ovaries for hemorrhage, which had resisted all other treatment, with complete and permanent success.

Dr. Heywood Smith said that, apart from the cases of malignant disease and fibroids, there were no cases of hemorrhage of which one saw more than those due to retained products of conception. He observed that all cases did not require to be widely dilated by tents in order to effect a cure, and he had found the application of the solid nitrate of silver to the entire surface of the uterus very beneficial. He said that the oviduct was often long and convoluted in these cases.

Dr. Fancourt Barnes said it was sometimes very difficult to differentiate between a piece of placenta which had become almost a part of the uterine wall and the uterine wall proper.

Dr. Robert Barnes recalled a fact which not seldom occurred in women of that age,—viz., profuse epistaxis. That pointed to a constitutional cause, heart-disease, or some disturbance of the circulation, symptoms which were relieved by the hemorrhage, uterine or otherwise. The term vicarious menstruation, which was applied to these cases, was not altogether appropriate, but it showed clearly that they must look beyond the pelvic organs in order to unravel the mystery of some of these cases. If they took the other extreme of life,—the commencement of ovarian life,—they sometimes met with the most tremendous hemorrhages. He had seen one or two cases that had terminated fatally. He remembered a case at Brighton some years ago in which the patient had a very narrow escape. Of course when one meets with these cases in young women, one's first thought was to suspect pregnancy, but in this case he was enabled to say that it was not so. He had succeeded in arresting the hemorrhage by local measures. The great thing was to get a diversion of the blood from the uterus, whence it escaped. In one case only transfusion had saved the patient. The cases which were independent of local uterine or ovarian disease were also of extreme importance. They knew that taking away the ovaries in cases of hemorrhage due to fibroids would sometimes stop not only the hemorrhage but the growth of the tumor. He had seen cases of that kind, and it must be looked upon as a last resource in these

cases. He maintained that gynæcologists were far less open to the reproach of not looking beyond the pelvic organs than were surgeons to the charge of neglecting these primary organs which were the ruling power in women.

Dr Inglis Parsons said he had had two patients supposed to be suffering from a malignant disease sent to him for the electrical treatment. In both cases hot water douches had diminished the hemorrhage. In answer to Dr. Fenton, he said he had not had the questionable advantage of making a post-mortem examination after using the constant current, though this had occurred in one case after the faradic current. He mentioned three cases treated by the constant current in which permanent relief had been recorded. He said that he had a good many cases of fibroids treated by electricity under observation which he should one day publish. He quoted one case sent to him by Dr. Edis in which he had made some thirty applications. It had the effect of relieving the hemorrhage, and she was practically free for two years, but recently she had had one profuse attack. He mentioned a case sent to him by Dr. Fenton of a patient, aged 43, who had a well-marked fibroid and profuse hemorrhage. In that case the current kept the hemorrhage in check, provided it was used about once a week, but not otherwise.

Dr. Bantock observed that in the cases of menorrhagia in very young subjects it was impossible to find any appreciable local disease, and they were restricted to constitutional treatment. Constipation very frequently coincided, and saline chalybeate aperients, followed by iron and ergot, usually brought about the desired result. There were, however, cases in which this treatment was of no use, and the patient might even die. Some years ago there was a case of this kind at the Dorset House branch of the Samaritan Hospital. One condition to which Dr. Edis had given great prominence was that of menorrhagia and metrorrhagia. due to retained placenta. He observed that when a portion of the placenta had been actually protruding from the os, that part of it was decomposed, while the upper part, particularly that near the adhesion to the uterine wall, was often perfectly free from decomposition. He agreed that the best curette was the nail of the index finger, but he could not agree that the blunt curette was preferable to the sharp curette, the spoon curette being that which he preferred. He did not think there was a more useless instrument than ovum forceps, for the portion grasped sure to tear away. He insisted upon beneficial effect of the tincture of the riate of iron when symptoms of pyæmia clared themselves, given in doses of fi 10 to 15 minims every two or three ho He observed that large doses of ergot m increase the hemorrhage when 10-mi doses would diminish it. With regard the administration of bromide of potassi he said that he had tried it years ago, had quite given it up since it seemed to duce to, rather than check, the hemorrha

Dr. Edis, in reference to Dr. Fanc Barnes's case upon which he had opera mentioned that the patient was very ill the time, her temperature when placed on operating-table being over 104° F. "mass" of placental tissue described as ha been found post mortem was only about size of a filbert and stuck up in one cor and even post mortem was by no means to identify. He defended the use of ovum forceps. He said they were useful certain cases. When he spoke of not gi ergot he alluded to cases in which there reason to believe that something had b retained in the uterus, and to that gen rule he adhered.

THE ANTITHERMIC PROPERTIES O HYDROCHINONE.

In 1877 Brieger first called attention the antithermic properties of hydrochin but it was not until 1883 that this substa from the work of Seifert and Steffen, quired a certain amount of repute as an a pyretic; later, in 1886, Silvestrini and chini published a number of observation their experience with this drug, both cli cally and experimentally, which, while est lishing the fact of the antithermic proper of hydrochinone, were not sufficiently ex sive to explain the mode of action of remedy. The subject has again been ta up by Dr. Gaetano Traversa, whose sults are published in *La France Médi* for May 16, 1890.

His experiments were undertaken with object of determining whether the rem was capable of lowering both physiolog and febrile temperature, and to establish degree and duration of the antithermic e of different doses, as well as the phenom which accompany or follow the thermic

ion. Through his studies he has arrived e following conclusions :

Hydrochinone has an influence both on iological and pathological temperature, ugh in healthy individuals the lowering mperature is much less marked than that h follows the administration of the same to fever patients.

a. In patients with fever a dose of 3 ns produces only a maximum reduction mperature of about .7° C.

In doses of 5 grains there occurs a re- tion of temperature of .85° C.

Doses of 6 to 8 grains produce a de- sion of 1.48° C.

Doses of 9 to 11 grains produce a ther- depression of 1½° to 3°.

These doses are well tolerated, and pro- e no gastric disturbance or nervous phe- ena.

The reduction of temperature results thirty to forty minutes after the admin- tion of the remedy, and reaches its maxi- m from one hour to one hour and a half rwards.

The antipyretic action is not ordinarily mpanied by any disagreeable symptoms, gh sometimes doses of 6 to 11 grains, quently repeated, are followed by abun- t sweatings, chills, and when the anti- etic effect passes off the temperature idly increases.

The blood-pressure does not appear to sensibly modified unless the doses are ex- mely large and frequently repeated, when reduction of temperature is accompanied a slowing of the pulse, especially in febrile es, and the blood-pressure is considerably uced.

3. In a healthy man, with doses of 6 to 15 ins, given at once, the depression of tem- rature does not amount to more than .8° C.

4. Animals do not support the influence of drochinone as well as man. In rabbits the tal temperature, even with doses of ¾ to 4 ains, is diminished a degree or more ; with es which are not fatal, but which are yet pable of producing convulsions, the tem- rature increases, and may amount to 38.4°

In dogs, with doses of ½ grain to 1 grain r every two pounds of body-weight, the tem- rature falls from $\frac{1}{10}$° to ½° ; but, on the her hand, with fatal doses, amounting to 2 ains for every two pounds of body-weight, mptoms of collapse appear and constitute e characteristic symptoms of the poisonous tion of this substance, and the temperature, ich had been already depressed, maybe one or two degrees, still continues to descend, until death results.

5. It is well to note that hydrochinone, though tolerated in large doses, does not give constant effects. The action frequently varies greatly in the same individual at different times with the same amount. The author's conclusions as to the mechanism of this drug are as follows :

1. Hydrochinone in small doses greatly increases the dissipation of heat, and, as a consequence, both in febrile patients and in healthy individuals, the peripheral temperature may be increased from ½° to 2°, while the central temperature is depressed.

2. This dispersion of heat is in great part due to the quantity of blood contained in the peripheral vessels as a consequence of vascular dilatation.

3. In a healthy man and in febrile cases the vascular dilatation precedes by about ten to fifteen minutes the reduction of the axillary temperature.

4. The vaso-dilatation does not depend upon the action of the vaso-motor centres, but is due to a modification of the peripheral centres in the vascular walls. The chills, which are observed on the subsequent ascension of the temperature, and the rapidity with which the vascular dilatation disappears, are proof of this fact.

5. As regards the mechanism of the antipyrexia, in addition to an increase in heat dissipation, the author states that there is likewise a diminution in heat production. This fact explains the reduction of rectal temperature which is produced by hydrochinone in rabbits in whom the external dissipation of heat has been prevented.

6. As to the manner in which the excretion of urea is affected, of sulphuric acid, phosphoric acid, and sodium chloride in the urine of animals subjected to the influence of hydrochinone, these principles, especially after the administration of moderate sized doses, are diminished in amount.

From these results the author concludes that hydrochinone reduces the temperature both by dissipation of heat and by preventing the production of heat. Thus hydrochinone diminishes heat production by retarding the chemical processes and oxidation which occur in the organism.

The author seems inclined to experiment with hydrochinone in typhoid fever not only on account of its antipyretic properties, but also because it possesses considerable power in arresting fermentations of various kinds.

THE TREATMENT OF EPILEPSY WITH BIBORATE OF SODIUM.

A paper published by MESSRS. J. S. RISIEN RUSSELL and JAMES TAYLOR in the *Lancet* for May 17, 1890, emphasizes a fact which seems to be little known,—namely, the value of the biborate of sodium in the treatment of epilepsy, while at the same time they call attention to some of the ill effects which may result from its use. The literature on this subject is very scanty. Fulsom, in an article to the *Boston Medical and Surgical Journal* for 1886, page 147, says that the effect of borax in cases where bromide was not well borne, or had been taken for a long time without effect, was very satisfactory; and he quotes the details of two patients, in both of whom severe symptoms of bromism made it impossible to continue this form of treatment. Fits became frequent and severe when the bromide treatment was discontinued; accordingly, the administration of borax was commenced, at first in 10- and later in 20-grain doses three times a day. In one of these cases seventy eight days were allowed to elapse before the new treatment was commenced, and it was continued for two years; during the last twelve months only two fits had occurred, caused on each occasion by "indigestion." The other patient had only two fits in eighteen months. Both patients became all right mentally, and were in perfect health; in both a scaly eruption appeared, but disappeared when arsenic was administered; and one patient was troubled by vomiting at the commencement of the treatment, but this ceased when aromatics were combined with the borax.

Gowers, in the second volume of "Manual on Diseases of the Nervous tem," says that he has found borax u in some cases of inveterate epilepsy, which bromide had no influence; but the influence of borax is not comparab that of bromide in cases in which this is e tive. He states that the administratio the drug may be continued for years, doses of 15 to 30 grains given three tim day after meals, without any ill effects be a possible eruption of psoriasis, amenable arsenic. The drug has also been tried Ward's Island Lunatic Asylum, where patients were selected who had been on b mide treatment for several months, with quent convulsions. The dose given was grains three times a day for the first days, and it was then increased to 15 grai but no marked improvement occurred in of the cases at the end of thirty-four days

Fére and Lamy, in a paper in the *Nou Iconographie de la Salpétrière* for November December, 1889, quote two cases in which eczematous eruption had been provoked borax. The patients were epileptics, who taking 30 and 45 grains respectively three ti a day, and the eruption only faded when drug was discontinued. These observers c sidered the eruption an ordinary eczema p voked by borax in persons who were pre posed, as both of the patients had seborrh of the scalp, and one had, in addition, a patches of old eczema, and they are incli to look upon the stomach disorder as pr ably accountable for the skin eruption.

The following is a tabular statement of cases treated by the authors:

Twenty Cases of Epilepsy treated by Biborate of Sodium.

No.	Name.	Age.	Duration of epilepsy.	Maximum dose given.	Duration of treatment.	Frequency of fits before.	Frequency of fits after.	Complications.
1	A. B.	16 years.	4 years.	40 grains.	16 days.	Several daily.	The same.	Nausea.
2	C. D.	32 years.	3½ years.	40 grains.	3 weeks.	2 months.	None.	Vomiting.
3	B. A.	4 years.	8 months.	7 grains.	2½ months.	12 daily.	None.	Sore lips and ears; rhi psoriasis.
4	D. C.	18 years.	1 year.	20 grains.	1 month.	3 weeks.	1 month.	
5	E. F.	20 years.	3 years.	30 grains.	2½ months.	3 days.	None for 1½ months	None.
6	G. E.	26 years.	18 years.	35 grains.	3½ months.	Weekly.	2 months.	Cutaneous eruption; vom
7	F. H.	15 years.	14 years.	30 grains.	9 weeks.	3 or 4 a week.	2 fits.	Sore lips.
8	H. G.	25 years.	12 years.	40 grains.	3 weeks.	Twice a week.	1 fit.	Pleurisy.
9	J. H.	19 years.	10 years.	60 grains.	6 weeks.	Nightly.	1 or 2 a week.	Sore lips; cutaneous erup
10	L. M.	15 years.	3 years.	30 grains.	2 months.	Weekly.	None.	Sore lips; vomiting.
11	J. L.	26 years.	10 years.	40 grains.	6 weeks.	3 days.	2 to 12 days.	None.
12	H. M.	10 years.	7 years.	50 grains.	4 months.	3 or 4 daily.	None for 3 months.	Sore lips and tongue; v ing, with abdominal pain
13	J. G.	14 years.	2 years.	40 grains.	7 weeks.	Weekly.	3 weeks.	Eczematous patch at ang mouth.
14	G. N.	20 years.	4 years.	50 grains.	7 weeks.	Varying.	None.	None.
15	M. H.	11 years.	1 year.	60 grains.	2½ months.	Several daily.	4 to 5 weeks.	Sore lips.
16	G. P.	22 years.	3 years.	20 grains.	3 weeks.	Twice a week.	1 fit.	None.
17	J. O.	15 years.	11 years.	30 grains.	2½ months.	1 to 9 days.	1 month.	Sore lips; nausea.
18	F. R.	21 years.	12 years.	40 grains.	2½ months.	1 or 2 daily.	9 days.	Cutaneous rash; nausea.
19	R. T.	14 years.	6 months.	20 grains.	6 weeks.	Weekly.	3 weeks.	Abdominal pain; vomi relaxed motions.
20	G. S.	15 years.	10 years.	20 grains.	7 weeks.	1 to 2 weeks.	6 weeks.	None.

ase 14 was that of a young man whose
were only controlled by such large doses
romide as produced severe symptoms of
nism. As smaller doses failed to influ-
e the fits, biborate of sodium was given,
the patient continued to take the drug
o the time he left the hospital, seven
ks later, without any ill effect and with-
having any fits.

ase 7 is that of a boy who presented dis-
t evidence of congenital syphilis, and was
rdingly put upon antisyphilitic treatment
a time; but as the fits did not diminish
requency or severity, this method of treat-
t was abandoned, and the administration
iborate of sodium in gradually increasing
es commenced. The result was most
ked, as in a day or two he ceased to have
and had no more, with the exception of
very slight ones, up to the time he was
harged nine weeks later.

ase 12 shows very strikingly the effect of
drug in a boy aged 10 years, who had
subject to fits for seven years, and
, during the last five years, had been
ing three or four slight fits daily. The
rval between the attacks became gradu-
lengthened until six weeks after the
tment was commenced. He had no
e fits from that time until he left the hos-
three months later. After he had been
ng the medicine for a month, the dose
g then 120 grains per diem, it had to
discontinued for a few days owing to
e lips and tongue, together with slight
miting and abdominal pain. It is a re-
kable fact, though one not unfrequently
served in this connection, that the authors
re able to resume the administration of
e drug in even larger doses without again
oducing any vomiting or abdominal dis-
mfort.

In Case 2, although the patient, a young
oman, aged 32 years, had no fits during
e two months she was under observation,
t the writers do not feel justified in draw-
g any conclusions from this, as the usual
erval between the fits had been two months.

Case 20 is that of a girl who had been
bject to attacks of *petit mal* for ten years.
arious remedies had been previously tried,
t none altered the frequency of the at-
cks, whereas she has been free from fits
r six weeks under treatment by the bi-
orate.

Case 17 shows the effect of biborate of
dium where bromide of potassium produced
tle or no effect.

In the first cases the authors commenced with 30 grains in the twenty-four hours, and pushed it up, as soon as possible, to 180 grains; but they found that nothing was gained by giving such large doses, as they had, in consequence, to suspend the medicine very frequently, owing to gastro-intestinal disturbance, and thus lost time. Therefore, in the later cases, they were contented with 30 grains as the maximum dose, given three times a day after meals. Though this drug undoubtedly possesses the power of controling the frequency of fits in many cases, and oftentimes does so when bromide has failed or cannot be given in sufficiently large doses without producing great depression, yet its administration is attended with certain unpleasant symptoms, to which brief allusion should be made. The most constant of these is an affection of the lips, which in its most typical and fully developed form results in swelling, chiefly of the lower lip, upon which small vesicles make their appearance and then become larger by coalescence; the contents then become opaque and milky, some of the vesicles burst, while others dry up, and the result is a scaly, chapped condition of the lips, resembling that commonly seen in cold weather. Other cases develop the chapped condition without the previous formation of vesicles. In two of the cases the tongue became sore and denuded of its epithelium at one or two points.

Two of the cases had slight eczematous patches on the skin close to the angles of the mouth, in addition to sore lips, and one of them (Case 3), a little girl, aged 4 years, who was taking 20 grains in the twenty-four hours, had, in addition, an inflammatory condition of the mucous membrane of the nose with slight purulent discharge, and psoriasis guttata scattered over the trunk and extremities.

Case 9 developed a curious erythematous condition of the hands. The fingers, backs, and palms of the hands and lower fourth of forearm were of a bright-red hue, and looked slightly swollen. The redness disappeared on pressure, and there was no evidence of pitting. The parts affected gradually became more dusky, so that in a few days they were almost purple in color, and about this time a few bright-red patches, looking almost like extravasations, but disappearing on pressure, made their appearance on his face. The tongue also became very red, sore, and denuded of its epithelium in several places.

Case 6 developed an eruption of small

punctiform papules, resembling the condition seen in sudamina more than anything else. The eruption was scarcely perceptible at times, while at other times it would be well marked, intensely irritating, and accompanied by redness of the skin, which looked a little swollen, and was sweating. The parts chiefly affected were the palms of the hands and soles of the feet; but patches were also seen in parts exposed to friction, such as waist, neck, axilla, etc. After the condition had existed for a week or more, very slight desquamation was observed on the palms and soles.

Case 18 developed an abundant crop of small papules all over the face, more especially on the forehead, below the eyes, and along the naso-labial folds, after he had been taking this drug about ten weeks. Associated with the papules was a reddish-coppery, patechial-like eruption, which did not disappear on pressure. No discomfort complained of. A week later the above had almost completely faded, when the patient had a severe fit, after which there was an exactly similar condition to that above described. Borax had been suspended when the first rash appeared, and the patient was then taking arsenic and salicin.

Nausea, and in some cases vomiting, necessitated the temporary suspension of the drug; but, as before stated, often the drug could be resumed without again causing any such symptom. In one case the vomiting was attended with abdominal pain, and in two there was diarrhœa. These patients were taking 120 grains in the twenty-four hours at the time when these symptoms showed themselves.

A considerable number of the patients became somewhat emaciated, and pulled down physically after they had been on this treatment for any length of time, but in no case was there ever any sign of mental depression. One patient, who was also taking cod-liver oil at the same time, put on flesh in spite of being on the borax treatment for nine weeks, which suggests that this would be probably a judicious combination in all cases.

Case 8, a young woman, aged 25 years, was attacked with pleurisy while taking the drug. The symptoms were pain, short, hacking cough, and rise of temperature; and a well-marked friction rub could be heard on auscultation. At no time was there any evidence of effusion, though there were several relapses after the first manifestation of the disease. The patient had never had a similar attack before, and as no history could be obtained of any of the usual ca of pleurisy, it might be suggested that affection of this serous membrane was s lar to that which we had seen in skin mucous membranes, and depended on biborate of sodium.

As regards the treatment of complicati there is little to be said, as all that is ne sary, as a rule, is to suspend the admini tion of the drug for a time. In cases wh vomiting is a repeated symptom, small d of cocaine, given half an hour before borax, will be found to obviate this.

In conclusion, the authors do not wish any way to compare borax to bromide in treatment of epilepsy, but consider it worthy of a trial, especially in those ca where bromide has failed or is badly bor

---

THE TREATMENT OF ACUTE GONO RHŒA.

In the *Archiv für Dermatologie und Sy* appears a paper by DR. FRIEDHEIM, contai an elaborate account of a large number of periments made in the clinic of Professor N ser, of Breslau, with the view of determi the best method of treatment in acute go rhœa. The object aimed at was to find local application which possessed in the hi est degree the power (1) of killing the go cocci, (2) of influencing the inflammat phenomena, (3) of promoting epithelial d quamation, and thereby securing mechani elimination of the micro-organisms. Amo the numerous drugs experimented with w various preparations of mercury, including t perchloride and salicylate, permanganate potash, iodoform, boric acid, pyrogallic ac resorcin, antipyrin, thallin, and many othe But of all those now tried, the best results, tested by the microscope, were obtained fr a solution of nitrate of silver, of a streng varying from 1 in 4000 to 1 in 2000. T treatment is begun by the injection of this s lution in the ordinary way, from four to s times a day, the result being that at first t discharge becomes more abundant, thicke and more purulent; but in about four da the secretion diminishes, becomes thin, a contains a quantity of epithelium. The go cocci also diminish in a remarkable manne and after a few days disappear altogether When this has taken place, the number of in jections of nitrate of silver is reduced to tw and afterwards to one daily; and other inje tions, such as boric acid or some preparati of zinc, are used as well. But, in spite of

most total disappearance of the discharge, one daily injection of the nitrate of silver to be kept up for many weeks. In cases ere the nitrate of silver could not be borne, en in weaker solutions than those above entioned, salicylate of mercury, or thallin, the chloroborate of sodium was substituted th a certain amount of success; and in the y rare cases in which no antibacterial injec- n could be tolerated, internal remedies were orted to. Of these, cubebs, turpentine, oil gaultheria, oil of sandal-wood, kava-kava, thyol, creolin, and copaiba were tried; t among these, copaiba alone, and that only some cases, was found to have any decided ect on the gonococci. As regards the dan- r of complications from the use of the ni- te of silver injections, it was found that this ode of treatment was really the best preven- ve. Thus, among twelve hundred cases of onorrhœa treated in various ways, there were ne hundred and sixty-four of epididymitis, t in one hundred and forty-two of these e epididymitis was present when the patient st came under treatment; while of the re- aining twenty-two cases, only one was being ated with nitrate of silver. The total num- r of cases given in the table which is ap- ended to Dr. Friedheim's paper as having en treated by nitrate of silver injections is ree hundred and eighteen, and in two hun- ed and thirty-seven of these it is stated that e antibacterial action of the drug was proved. —*British Medical Journal*, May 24, 1890.

CROTON OIL.

In the new part of the "Arbeiten des Pharmakologisches Institutes zu Dorpat" (p. 5), Professor Kobert returns to the subject of croton oil, taking as the basis of his memoir the thesis published three years ago by Herr Hirschheydt, which has been extended so as to include a number of fresh experiments. Herr Hirschheydt's thesis, it will be remembered (*Pharm. Journ.* (3), xvii. 881), dealt, among other things, with the experiments reported in three papers read by Mr. H. Senier before the Pharmaceutical Society (*Pharm. Journ.* (3), viii. 705; xiv. 446), from which it appeared that under certain conditions croton oil was separated by alcohol into two portions, the solution containing the vesicating principle, which was an acid closely allied to oleic acid, and the insoluble portion the purgative principle. An opinion was expressed by Herr Hirschheydt that two kinds of active principles could not be so separated, since the purgative and the vesicating action alike are due to crotonoleic acid, which may occur in the oil both in the free state and as a glyceride. Professor Kobert appears still to hold this view. In the present paper the opinion is expressed that a definite relation of solubility between croton oil and alcohol cannot be established, since it varies with the age of the oil, oils occurring, in fact, which are soluble in alcohol in any proportion, an experience which so far is not necessarily opposed to that of Mr. Senier. By treatment with successive quantities of alcohol, fresh quantities of oil are said to pass into solution; the portions also show different degrees of solubility, the acrid-tasting and vesication portion being the most soluble. It is thought that the varying solubility of the oil may depend upon the fact that the crotonoleic glyceride no longer exists in old samples of the oil, but only the free acid. From a large number of pharmacological experiments it was concluded that a neutral croton oil is essentially milder in its action than an acid oil, such as is officinal in the P. G. Experiments with the free crotonoleic acid did not give favorable results, as doses less than .01 gramme were uncertain in their action, while larger doses caused a very disagreeable burning sensation in the intestines. Professor Kobert therefore recommends, if croton oil be retained in the Pharmacopœia, that only the neutral crotonglyceride should be used, which can be kept unaltered if protected from light. In conclusion, it may be remarked that no chemical examination appears to have been made by Mr. Senier of the insoluble "purgative" portion separated by him, though it would be interesting to know whether the portion of croton oil remaining undissolved by spirit under the conditions mentioned by him consisted wholly or in part of the neutral crotonoleic glyceride, which might also to some extent be carried into alcoholic solution by free acid present in the oil, and so appear as a constituent of both the soluble and the insoluble portion.—*Pharmaceutical Journal and Transactions*, May 31, 1890.

THE PROPERTIES OF FLUORIDE OF SODIUM.

In the *Deutsche Medicinische Wochenschrift* for May 29, 1890, Dr. O. Hewelke publishes an article on the antifermentative and antiparasitic action of fluoride of sodium, and as to the results of its continued employment.

In comparing Dr. Hewelke's results with the statements of other authors, we find considerable discrepancy, in the first place, as to the minor chemical characteristics of the salt employed. Thus, Professor Thumas, who some time ago published an article on this salt, stated that the preparation which he employed was perfectly neutral. Schulz, in another article published in *Arch. f. Exp. Pathol. u. Pharmak.*, 25, iii., iv., experimented with a preparation which had a slightly acid reaction, while Dr. Hewelke states that his preparation, which he claims to have been chemically pure, was strongly alkaline.

It is evident that this difference in the character of the preparations used cannot be without influence on the results, as its occurrence in a pure preparation would be impossible if the salt is one of constant composition. Without doubt, where an acid reaction exists, we must admit the presence of an excess of hydrofluoric acid, since Rabuteau, in his essay on the fluorides, attributes a strongly alkaline reaction to the salt under discussion. Where a neutral reaction is present, we may also admit that an excess of hydrofluoric acid is present, just in enough quantity, however, to be neutralized by the alkalinity of the sodium fluoride. It would, therefore, seem that Hewelke's results are more reliable, since in his experiments the results are to be attributed to the action of the salt, and not to the hydrofluoric acid.

Dr. Hewelke found that the yeast plant was prevented from growth in the presence of solutions of 1 to 100 or 1 to 300 of this salt; in 1 to 600 and 1 to 3000 there was a marked interference with fermentation. The author found, further, that while urine unmixed with any antiseptic would undergo alkaline fermentation within three to five days, in the presence of 1 to 2000 solution of sodium fluoride the acid reaction persisted from fourteen to fifteen days; in solutions of 1 to 600, it remained twenty days; in 1 to 100, over a month. The decomposition of urea was similarly delayed. Solutions of 1 to 80 to 1 to 160 parts of water, prevented decomposition of blood transudation and similar substances. Culture experiments were made, the substances being compared with carbolic acid and sublimate, and the results seem to show that this substance is one of the most active preventives of fermentation. Experiments were also made on two dogs, ⅓ of a grain of fluoride of sodium being daily injected, by means of a catheter, into the stomach. There was a progressive loss of weight, which increased in intensity w the dose was increased. There was no teration in the blood at first, although l in the poisoning there was found to b reduction in the amount of hæmaglobin, breath possessed a fetid odor, and there ulceration of the gums. At first vomiti was produced; no changes were noticed the blood-corpuscles. Albumen and blo cells were found in the urine, and there progressive loss of appetite, and after a f days death was produced. On post-morte examination general anæmia of the tissu was noted, subpleural ecchymoses, and hea clots, the mucous membranes of the stoma and intestine were pale and covered w mucus, the kidneys were somewhat whiti in their cortical substance, and the caps was readily removed.

This experiment lasted forty days, thi grains of fluoride of sodium in all bei given. A second experiment produced so what similar results, greater loss of wei taking place in spite of abundant feedi while a third experiment, in which especi attention was devoted to the influence fluoride of sodium on the excretion of nitr gen, seems to show that this salt diminish tissue-change.

THE PHYSIOLOGICAL ACTION OF POTASSIUM FERROCYANIDE.

In the *Bulletin Général de Thérapeutiqu* May 15, 1890, Professor Combemale an A. Dubiquet publish a long experiment essay as to the physiological action of pota sium cyanide, and they summarize their re sults as follows:

1. Potassium ferrocyanide is not poisonou to animals. In the dog it possesses no di uretic properties.

2. In animals which do not vomit, such a the guinea-pig, for example, even in sma doses, it possesses a certain diuretic powe which is manifested for about three hour after the administration of the dose.

3. In the dog, after repeated administra tion, the cyanide of potassium produces in testinal disturbances, and vomiting is invari ably produced if the dose reaches or exceeds 12 grains for every two pounds of body weight, no matter what may be the degree of the concentration of the solution.

4. No constant effect is produced either on the temperature, circulation, respiration, or nervous system.

5. The ferrocyanide is decomposed in the economy, and is eliminated in the urine i

form of ferricyanide when the dose in the nea-pig does not exceed 7 grains for every pounds of body-weight.

. The diuretic action of potassium ferro-nide appears to depend upon the libera-n of the potassium and the conversion of ferrocyanide into the ferricyanide, and assium salts are thus immediately formed ose diuretic properties are well recog-ed.

RHUS AROMATICA IN ENURESIS.

In the *Annals of Gynæcology and Pædiatry* May, 1890, DR. W. M. POWELL reports teen cases of enuresis cured in children n 2½ to 18 years of age, which had been der treatment at different times at the dis-saries but without relief. All of the cases orted were free from phimosis or preputial sions, and in all cure was accomplished bout one month's treatment with the fluid act of *Rhus aromatica*.

he remedy was given usually with com-nd tincture of cinchona or elixir of cali-a bark, Dr. Powell recommending the owing formula for young children:

℞ Ex. rhois aromat. fl., fʒiii;
Elix. aromat., fʒiss;
Aq. cinnam., q.s. ad fʒiii. M.
g.—Half-teaspoonful, to be increased to one tea-nful, four times a day after eating.

Much stress should be laid upon diet and eral regimen. The quantity of drink uld be restricted, and no fluid should be wed after four or five o'clock in the after-on for some time after the child is consid-d cured. The child should be taken up urinate late at night, early in the morning, d, if necessary, once during the night, and uld always be thoroughly awakened.

Very little meat should be allowed if the ient shows any rheumatic symptoms; in-ed, children do better without it, owing to e effect it has of acidifying the urine, hich irritates the bladder and provokes pulsion.

The child should be kept in the fresh air much as possible, provided the weather be e, and allowed to exercise, care being taken have flannel next to the skin and the feet ell protected with stout shoes. The child ould be given a cool or even cold sponge-th each morning, with a tablespoonful of sea lt added. The body should then be briskly bbed with a moderately coarse bath-towel, ecially in the region of the spine.

Of course the above rules are out of the question in dispensary or poor practice.

SUPERFICIAL SUTURING OF WOUNDS.

The best method for uniting wounds is no new question before the profession. Great diversity of opinion has prevailed, and endless articles have been written from the earliest infancy of surgery to the present time, advocating such metals as silver, lead, iron, or steel. The use of the silk or catgut ligature has its disadvantages in the old method of sewing up wounds, which is certainly not the quickest, not the least painful, and decidedly the most repulsive to the patient, and few will submit to that treatment unless first under the influence of some anæsthetic. In uniting wounds, therefore, of the soft parts, or bringing their edges together so as to promote union *per prima*, to obtain as little a cicatrix as possible, with as little delay and pain to the patient, should be the object of every practitioner, especially the surgeon. We find, however, many practitioners, if called upon to dress an incised or lacerated wound, will proceed to unite the same by interrupted sutures of silk, or endeavor to maintain the wound in proper apposition by strips of adhesive plaster; especially is this latter method adopted if the solution of continuity be sustained on the face or head, owing, as is well known, to the irritating influence of the silk suture and the susceptibility to erysipelatous inflammation of those parts. We have all, no doubt, experienced great inconvenience and delay with the use of the adhesive plaster, and no matter how well adjusted the ends of the wound might have been a few hours ago, it will invariably be found on the next visit that there is a stretching propensity of the plaster, and the edges of the wound, once in perfect apposition, now gape. If the old method of interrupted sutures of silk be used, we will soon obtain the irritating effect of the silk, and as the parts begin to swell the silk begins to cut, and unless soon removed will leave an ugly mark at the seat of the suture. It is well known also that wounds dressed in this way leave underneath a cavity for the accumulation of discharges and subsequent suppuration.

For these reasons DR. KIERULFF, in a paper read before the Los Angeles County Medical Society (*Southern California Practitioner*, May, 1890) highly recommends the results obtained in the suturing of all ordinary

wounds by the automatic suture-needle invented by Dr. John Van R. Hoff, of the United States army. These needles are made of steel, one or two on each side, resembling somewhat a bird's talon, and, when applied, grasp themselves into the flesh on both sides of the wound, and can be most accurately adjusted to any wound by means of a handle. There is no chance for any dislodgement like that of the *serre-fine;* once introduced they become a fixture until removed. It is needless to state that one of the important aids to the speedy union of wounds is the antisepsis of the surgeon's hands, which may be accomplished best by washing with soap and nail-brush; then immerse in ether and then in corrosive sublimate solution 1–1000.

A very efficient method of disinfection of the hands may be attained by brushing them from three to five minutes with potassium soap, and then thoroughly wash with three or five per cent. solution of carbolic acid, one-tenth of one per cent. solution of sublimate, or one-third of one per cent. solution of thymol. Of course it is possible that these solutions may not be accessible, but no surgeon should ever be found without an antiseptic tablet of corrosive sublimate.

The wound should be treated according to the Von Bergmann method, and if possible absolute hæmostasis procured. The edges, now accurately adjusted, will be held in like manner by these needles, and the pressure made by them on both sides of the wound gives the desired acupressure for arresting hemorrhage that may exist. The dressings should be dry, sterilized gauze, impregnated with boracic acid or iodoform powder, or the parts may be dusted with the powder before applying the gauze. Should the injury prove to be a laceration of the scalp, one can readily perceive the advantage over the old method, in being able to unite the wound without the necessary preparations incident to wounds of this kind.

The suture-needle is generally removed in about forty-eight hours after the first dressing, and strips of adhesive plaster used instead. If the wound should be of any length and depth, then every alternate needle is removed, as the case may be. This method over the old manner of suturing wounds is not only a great relief to the physician, but a great boon to the patient. There is no necessity for anæsthetizing, no such delay and anxiety and pain experienced in either placing or removing the suture-needle, as is experienced in the former method, and thus one has not only the quickest but the most simplified method for uniting wounds and promoting their union by first intention.

ECTOPIC GESTATION, ESPECIALLY WITH REFERENCE TO DIAGNOSIS AND THERAPEUTICS.

At the meeting of the New York Medical Association, held in Brooklyn on May 1890, Dr. George T. Harrison, of New York, read a paper on the above subject (*Medical Record*, June 14, 1890).

In some preliminary remarks on the pathology of this anomaly, he said the doctrines recently taught by Lawson Tait and John Strahan were diametrically opposed to the truth. In regard to etiology, pelvic peritonitis, producing flexion and constriction of the tube, was, as stated by Virchow, a potent factor in the production of tubal pregnancy. The changes produced in the tube by catarrh and blennorrhœa were also a frequent cause of this variety. Myomata of the uterus and polypi of the tube in some cases played a conspicuous *rôle*. As a matter of positive knowledge it might be stated that in all cases of ectopic gestation the uterus during their development underwent the same changes as in the beginning of normal pregnancy.

As to the possibility of ovarian pregnancy, Virchow had recently declared that in his opinion no doubt could exist in regard to its occurrence, and in Winckel's text-book on obstetrics there was an illustrative drawing of a beautiful example of this form of extra-uterine pregnancy. Whether primarily the fertilized ovum could become attached to the peritoneum and undergo development (abdominal pregnancy) was a matter of doubt because it had not been certainly demonstrated that tubal and ovarian pregnancy could be excluded in the cases heretofore investigated.

In tubal pregnancy, which was the form most frequently met with in practice, the rupture, which ordinarily took place early in pregnancy, might occur either into the broad ligament or at the upper periphery of the tube into the abdominal cavity. The doctrines taught by Tait and adopted by Strahan upon the relations of tubal pregnancy to retro-uterine hæmatocele, were radically wrong. What he called extraperitoneal hæmatocele ought to be called peri-uterine hæmatoma, or simply hæmatoma; while the term retro-uterine hæmatocele should be limited to those blood tumors occasioned by effu-

lood into a part of the peritoneal cavity gated from the rest of the cavity by do-membranes, Douglas's pouch usually g the seat of this effusion. What Tait d an intraperitoneal hæmatocele was hæmatocele at all, but a free effusion lood into the abdominal cavity, there g no tumor displacing the uterus for- . If, however, after rupture of a tubal nancy, the extravasation of blood took e at a part of the abdominal cavity by do-membranes (which would naturally be glas's pouch, between rectum and uterus), blood would separate the walls of this e, displacing the uterus forward, en- ching on the space of the rectum, and form- as a rule, a globular, well defined tumor. ch blood tumors could also be formed somewhat different mechanism, that is, e hemorrhage persisted for some time was moderate in degree, and the pelvic y was closed above by blood coagula y inflammatory adhesions. Effusion of d into the broad ligament gave rise to lood tumor beside the uterus, a true atoma. The correctness of these views attested both by clinical data and post- tem observations; and in at least three nces Dr. Harrison was enabled to di- sticate positively the existence of adhe- s between the uterus and rectum, the ins of previous partial peritonitis, in subjects of which hæmatocele was sub- ently developed. The two conditions, ro-uterine hæmatocele and hæmatoma uld, as a rule, be readily distinguished. simply ignored the existence of hæma- a in its true significance, there being him only extraperitoneal hæmatocele, erly called hæmatoma, and free extrav- ion of blood into the abdominal cavity. refute this error it was only necessary uote the high authority of Virchow and such competent observers as Ziegler, bs, and Coates.

s demonstrated by Karl Schroeder, rup- e of a tubal pregnancy was one of the t frequent causes of retro uterine hæma- le. The cases of Hart, Coates, Maury, others proved that the rupture might e place into the broad ligament and result the formation of a hæmatoma; but the s of pathological anatomy and clinical ob- vation in other cases could only be ex- ined on the hypothesis that the above lanation of the origin of retro-uterine matocele was correct.

n regard to the possibility of diagnosti- cating ectopic gestation in the early months of pregnancy, he quoted Tait's opinion in the negative, and remarked that such scepticism was unjustifiable in the light of recent experience. He had himself seen four cases of tubal pregnancy prior to rupture, and in one of them the diagnosis was confirmed by the extrusion of the decidual membrane from the uterine cavity. It was true, however, that these cases were not generally seen until rupture had taken place. Dr. Harrison said he concurred fully with Veit in regard to a diagnostic sign, to which he called attention. This was the pecular softness of the pregnant tubal sac, and it was not found in any other variety of tubal tumor. In addition, the pregnant tube showed a degree of elasticity peculiar to itself. After blood had been effused into the tube the differential diagnosis became much more difficult, since under these circumstances the tube was much more tense and harder to the touch.

As a rule, women who were the subjects of ectopic gestation did not invoke the aid of the physician until symptoms of rupture had appeared. The clinical phenomena then presented were those of a free hemorrhage into the abdominal cavity, or those pertaining to hæmatocele or hæmatoma. The diagnosis was made absolutely certain if decidual membrane was extruded from the uterine cavity accompanied by moderate hemorrhage. In the later months of ectopic gestation the diagnosis of pregnancy was generally easy; but the demonstration of the fact that the fœtus was outside of the uterus might offer difficulties. Accurate bimanual palpation, however, would ordinarily lead to the recognition of the true condition.

In the matter of treatment, Dr. Harrison said he was in entire agreement with the views of Olshausen. In the first months, before rupture, if the diagnosis seemed certain, laparotomy was indicated. After rupture had occurred, during this period, operative interference was indicated only when the symptoms assumed a threatening character. When the first months had passed, if the ovum continued to grow, operation was called for, and the sooner the better. If possible, the entire fœtal sac should be extirpated. If not, it should be sutured to the abdominal coverings and drained above. In individual appropriate cases the future would have to decide whether it is not best to leave the placenta and immediately close the abdomen. Electricity, while it would destroy the fœtus, would not cure the patient.

THE TREATMENT OF ACUTE AND GONORRHŒAL RHEUMATISM WITH PHENACETIN IN LARGE DOSES.

The treatment of rheumatism has been greatly facilitated by the discovery of the new antithermic and analgesic remedies. Antipyrin has been found to possess considerable efficacy in the treatment of rheumatism; but, unfortunately, the opinion as to its value, which at first followed its employment in this affection, has been largely modified by the great frequency with which relapse occurs.

Nevertheless, numerous observations are on record in which antipyrin is claimed to produce more rapid cure of acute articular rheumatism than even salicylic acid, the elaborate reports of cases by Bernheim, Germain Sée, Dujardin-Beaumetz, and Guttman giving the result of twenty-five days for antipyrin and thirty-five days for salicylic acid before cure is produced. These physicians all favor the employment of antipyrin on account of its facility of administration, its freedom from poisonous effects, and the rarity of any unsatisfactory symptoms, which so frequently follow the administration of salicylic acid; such as ringing in the ears, depression of the heart, or dyspnœa.

The only objection to the routine employment of antipyrin in the therapeutics of rheumatism, if the tendency to relapse is not admitted, is the large doses required, since nearly all authorities deem that less than from sixty to one hundred and twenty grains in the twenty-four hours is insufficient. Such large quantities of antipyrin are apt to produce gastric disturbance, while, further, the impression does not seem unwarranted that the constant employment of these large amounts is not entirely free from danger.

In the *Bulletin Général de Thérapeutique* for May 15, 1890, Dr. Refat places himself on record as an ardent supporter of the great value of phenacetin in the treatment of acute and gonorrhœal rheumatism. Experiments have shown that, even in as much as 30 grains of phenacetin for every two pounds of body-weight, poisoning is not produced, and consequently it may be administered in large doses without serious inconvenience, with the single exception that it tends in large doses to produce profuse sweating, and therefore more or less depression. More than a year ago, Dr. Refat writes that he commenced to employ phenacetin in rheumatism, beginning with a total dose of forty-five grains, taken in divided doses, at intervals of three hours during the day. In the majority of cases he found that this quantity was insufficient in acute rheumatism where more than one joint was affected, and it was ordinarily necessary to increase the dose about fifteen grains each day until pain was relieved. He rarely, however, exceeded ninety grains in the twenty-four hours, or, at most, one hundred and twenty. After having found the quantity which was necessary to produce amelioration of the patient's condition, this amount was persisted in for three days, and then again gradually diminished until the patient was only taking forty-five grains a day, and this was persisted in for a week. The average duration of treatment under this method the author claims to be about seventeen days for moderate cases and twenty-one days for those of greater intensity. If these results are compared with the average duration of treatment required by antipyrin, it is noted that there is considerable to be said in favor of phenacetin. The author's cases were sixteen in number, and the majority of these were of an extremely severe character. It must be remembered, however, that phenacetin is not as free from danger of accident as the author would appear to claim, since it may lead to the production of profuse coliquative sweating, cyanosis, and uræmic accidents, and several cases of marked poisoning by phenacetin are on record.

As regards the treatment of gonorrhœal rheumatism, the author refers to a characteristic case in which salicylate of sodium produced no influence either on the pain or on the general symptoms. Phenacetin was given in doses of 15 grains every four hours and on the very next day improvement was noted; the patient had passed a good night and, after the repetition of this treatment the next day, seventy-five grains being given, the pain had entirely disappeared, although movements produced slight suffering. Phenacetin was then continued for several days in the same dose, and pain gradually decreased. One week after, the patient was apparently entirely cured, although there was some atrophy of the triceps muscles, which was relieved by continued employment of electricity.

Two other cases are also referred to, in the first of which phenacetin produced complete relief within a week, while in the second iodide of potassium and salicylic acid had been taken without producing any effect, and phenacetin produced almost entire cure with

o weeks. Although the author only reports ree cases of gonorrhœal rheumatism, yet the ult seems so remarkable that further trials this remedy are apparently warranted.

HE THERAPEUTIC POWER OF ANEMONINE.

We have already alluded to the value of e different preparations of this member of e Renonculaceæ group, anemone pulsa-la, as recommended by Huchard and Eloy diseases of the heart, and recently it has en further recommended by Dr. Bazy in e treatment of gonorrhœal orchitis. The ter, in his hospital service, as reported by r. Dormant in his thesis on this subject, re-es forty-three cases of this affection, in ich thirty seven were perfectly cured with-t any other medication whatever.

Struck by these facts, DR. C. BOVET has ted the value of this drug in similar patho-ical affections of the female pelvic organs, ploying first the tincture and then the ac-e principle anemonine. His results, the thor claims, warrant him in designating emonine as the analgesic *par excellence* for lex painful affections of the uterus, espe-lly in the diverse pathological conditions ich are accompanied by menstrual pain, ether dysmenorrhœa or amenorrhœa, or ether the symptoms result from metritis perimetritis, or inflammation of the ovaries. e states that his experience in all comprises irty-four cases, of which twenty-two were of ficult menstruation without discoverable atomical cause, eight cases of metritis and rimetritis, two of uterine prolapse, and two ovario-salpingitis. The author claims that all of these cases anemonine served to re-ve pain within forty-eight hours. He gives tailed notes of two cases, from which we fer that his ordinary mode of administration to give ⅙ of a grain of anemonine in red ine.

THE PHARMACOLOGICAL PROPERTIES OF ULEX EUROPÆUS.

From its botanical position it might be pre-pposed that *Ulex Europæus* would possess a rtain amount of activity, for it is closely al-ied in botanical characteristics to spartium d cytisus, which, on account of the alkaloid arteine in spartium scoparium and the alka-id cytisine in cytisus, are recognized as active isons. The twigs are frequently used as a substitute for tea, and the young sprouts as a vermifuge for cattle.

The first chemical examination of this plant was made simultaneously in England and France by A. W. Gerrard and Pinet, who recognized in the ulex the presence of an alkaloid which they termed "ulexine." According to these authors ulexine has the formula of

$$C_{11}H_{14}N_2O,$$

and crystallizes out of chloroform in colorless and odorless crystals. These crystals are free from water, are very hygroscopic, and readily soluble in water, insoluble in ether, and deliquescent in a moist atmosphere. Ulexine has a strong taste, and is capable of precipitating cocaine, quinine, and strychnine out of solutions of their salts, and is even able to liberate ammonia from solution of its salts. If sulphuric acid is added to the nitrate of ulexine a yellowish-red color is produced; with chloride of iron, ulexine and its salts give a red color, which disappears on the addition of water. If bromine is added drop by drop to a solution of ulexine in chloroform, a white precipitate, which is probably monobromulexine, is formed, while the addition of more bromine leads to the development of an orange-red color, due to the presence of tribromulexine, with the formula

$$C_{11}H_{14}Br_3N_2O.$$

From the residue, after the extraction of ulexine from the seeds, a second base remains, soluble in ether, which is totally different from ulexine. It has chemical characteristics closely in accord with those of cytisine, extracted in 1865 from the *Cytisus laburnum* balsam by Husemann and Marmé, and the similarity is further extended in the almost identical chemical composition, and in numerous other respects, especially as regards behavior to different tests.

Gerrard and Symons, however (*Pharmaceutical Journal and Transactions*, June 14, 1890), do not admit that these two alkaloids are identical, and, in fact, claim that while ulexine and cytisine have much in common, there is quite as close a resemblance between eserine and sparteine, both of which are alkaloids obtained from plants belonging to the same natural order, and in percentage composition they are not far removed from pyrodine, nicotine, and pilocarpine.

They tabulate the difference between cytisine and ulexine as follows:

Cytisine. $C_{20}H_{27}N_3O$.	Ulexine. $\frac{1}{2}C_{22}H_{26}N_4O_2$.
Permanent in air.	Very hygroscopic.
Sublimes completely, forming splendid crystals.	Refuses to sublime in air without decomposition, and when heated *in vacuo* does not sublime to any extent at 225° C.
Scarcely soluble in chloroform.	Freely soluble in chloroform.
Formula weight, 324.41.	Formula weight × 2379.34.

Nevertheless, numerous experiments made by different authors have shown that there is likewise a close analogy between these two alkaloids as regards their pharmacological properties.

The properties of ulexine have been recently subjected to elaborate study by PROFESSOR KOBERT in the Pharmacological Laboratory of the University of Dorpat, and his results published in an original communication in the *Deutsche Medicinische Wochenschrift* for May 8, 1890.

His experiments show that these two alkaloids are practically identical, and their properties are described as follows:

In small doses given subcutaneously to animals an evident increase of blood-pressure is produced. If extremely small doses are given, the rapid excretion of these alkaloids through the kidneys may prevent any effect on the blood pressure, since excretion may be quite as rapidly, or even more rapidly, accomplished than absorption. Both these alkaloids, therefore, on these grounds, possess diuretic properties, even in cases of depressed blood-pressure. This action is, however, a transient one, and passes off in a few hours, and cannot be compared in intensity to the corresponding action of digitalis, principally for the reason that two of the active constituents of digitalis are only with difficulty absorbed, and are with still greater difficulty excreted, and, as a consequence, a prolonged action is produced. Cytisine and ulexine, on the other hand, are both rapidly absorbed, and are likewise excreted with great rapidity; while digitalis acts simultaneously in increasing the action of the heart and producing contraction of all the blood-vessels, the diuretic action of the two alkaloids under consideration rests only on the irritation of the vaso motor centre and the consequent increase of blood-pressure, but are without any action on the heart itself. In this connection Professor Kobert is in opposition to Dr. Bradford, who has claimed that the increase of blood-pressure may be produced even in paralysis of the vaso-motor centre. Professor Kobert, however, states that in isolated organs no vascular action whatever can be produced through these alkaloids. In the administration of doses somewhat larger than those necessary to increase blood-pressure, symptoms of further central irritation follow the administration of both these alkaloids to warm-blooded animals, the most marked of these symptoms being vomiting, convulsions and dyspnœa, progressing towards respiratory paralysis, which is the cause of death in fatal poisoning.

If, however, life be prolonged by artificial respiration, a second interesting stage results in which the ends of the motor nerves are paralyzed in precisely the same manner as follows the administration of curare. This state is likewise produced with great readiness in frogs; the muscles are, however, entirely unaffected. The ulex is to a certain extent used as a food for cattle, a custom which Professor Kobert shows is of great danger not only to the cattle but also from the fact that the ulexine is excreted in the milk, and a case is on record in which a child was poisoned through cytisine excreted in the milk of a goat fed with cytisus.

Professor Kobert also calls attention to the fact that a second alkaloid is contained in the ulex, which is, however, in its action entirely different from ulexine. This second alkaloid is also poisonous, whether given directly or whether contained in the milk of animals in whose diet this substance enters.

Professor Kobert believes that this remedy will be of considerable value in therapeutics from the property which it possesses, in comparatively small doses,—of $\frac{1}{10}$ to $\frac{1}{12}$ grain of the nitrate,—injected subcutaneously, of, within half an hour, producing rapid increase of blood pressure, especially if the pressure has been considerably below the normal. Clinical experiments as to the use of this remedy are therefore, highly desirable.

WHAT CAN BE EXPECTED FROM LOCAL TREATMENT IN HAY FEVER AND PAROXYSMAL SNEEZING?

At the meeting of the West London Medical Chirurgical Society, held May 2, 1890, DR. SCANES SPICER pointed out that the symptoms of hay fever are pre-eminently perversions or exaggerations of the normal nasal reflexes or signs of nasal irritation; this being so, careful examination of the nose and naso-pharynx was an essential preliminary to the intelligent treatment of any given case (*Medical Press &*

ular, May 21, 1890). Careful examina- disclosed hyperæmia with hyperæsthesia, r diffuse or in localized patches; and as- ted or not with gross structural deformi- etc., of the nasal passages. The relation ese hyperæsthetic areas to the external irri- on the one hand, and to the involved ve-centres (probably bulbar) on the other, e considered, and the various ways in which ight be sought to arrest the disease indi- ed. The general and local treatment of fever was then considered, and the advan- s pointed out of the medicated nasal cyl- ers, which the author had devised, in that they permitted free nasal respiration ng use; (2) they could not slip back into pharynx during sleep; (3) they caused the cted tract to be soothed and bathed by the dicament for many successive hours. Local tment, more especially by the galvano- tery, calculated to modify the peripheral eræsthetic area, so that they no longer veyed undue stimuli to the nerve-centres, been of late attended by the most favor- e results in the practice of the author and many others.

HALATIONS OF HYDROFLUORIC ACID.

Inhalations of hydrofluoric acid in the atment of pulmonary lesions seem recently have been less employed than was the case t a short time ago. Dr. Garcin has, how- er, persisted in the employment of this rem- y, and in *La Pratique Médicale* for May 27, 90, he gives the results of his observations. He believes that hydrofluoric acid is a mi- obicide of the most marked nature in de- oying the virulence of the tuberculous ent, or, at least, in protecting the pulmo- ary tissue from its ravages. He claims hat the results of this method of pulmo- ary antisepsis are constant in their rapidity nd favorableness, and the improvement hich follows their employment is suffi- iently prominent to almost warrant the tatement that cure has been effected.

He claims that in the great majority of ases inhalations of hydrofluoric acid consid- rably improve the general state and per- it the patients to resume their ordinary ccupations. The coughing is suppressed, yspnœa relieved, sweating overcome, and he appetite and strength return and the body-weight increases.

If these results are constantly obtained, even ever obtained, the great value of the method is evident, especially as regards the gastro-intestinal canal. Nevertheless, even Dr. Garcin, enthusiastic supporter of this method as he is, does not claim to cure all cases of phthisis, and his reservations go largely to add to the value of his results. He claims, however, that where the organic lesions already produced are not themselves capable of leading to a fatal issue, that then improvement may be expected.

TREATMENT OF PHTHISIS BY INHALATION OF SUPERHEATED AIR.

At the meeting of the Clinical Society of London, held May 23, 1890, Mr. H. H. Taylor related some cases illustrating the "Treatment of Phthisis by the Inhalation of Superheated Air" (*Lancet*, May 31, 1890). Four cases of pulmonary phthisis were treated, two complicated with laryngeal phthisis. The air was inhaled at about a temperature of 300° F. The inhalations appeared to cause no inconvenience, neither the temperature, pulse, nor respirations increasing, nor did the skin act more freely. The results obtained were insufficient to base any definite statement as to the value of this treatment. Two cases of pulmonary cavities, which had been tapped and drained, were then made use of in order to determine, as far as possible, if the heated air extended beyond the bronchi. The communication between the mouth and the cavities was very free. A thermometer in each case was placed in the cavity, but after inhaling air at a temperature of 300° F., it only rose one degree in one case; in the other there was no result at all. It would thus appear that the air was quickly cooled down to the normal temperature of the blood, and never reached the smaller tubes above that temperature. If this were the case, it completely disposed of any theory that this treatment could have a specific effect on the course of phthisis.

The President asked whether any theory was promulgated which showed why superheated air should be advantageous, and whether the bacilli were diminished by the treatment.

Mr. Taylor replied that Weigert was responsible for a theory that the hot air killed the bacilli, which could only live in a small range of temperature; but this was impossible, for the hot air was cooled before it reached the lungs. The bacilli had not been found diminished in number or potency.

Dr. Macfarlane knew of one case in Essex in which the treatment had been tried without good result.

Dr. Dawson Williams stated that Dr. Cranstoun Charles had tried it, and, he believed, with good results, though all the reports from America negatived the idea that good could be done by it.

So also at the meeting of the Academie de Médecine, held June 3, 1890, Dr. Dujardin-Beaumetz (*La Médecine Moderne*, June 5, 1890), stated that it was extremely important to do away with the delusions which had obtained a certain amount of credence among the general public, and even among physicians, as to the possibility of the cure of phthisis by treatment with hot air.

The idea originated with Weigert, who imagined that it would be possible to destroy the bacilli of tuberculosis while within the lung by the inspiration of hot air, but Mosso and Rondelli have shown that even when the air, at a temperature of 100° C., was inspired, when it reached the alveoli its temperature, as expressed by the author, was no higher than the air in the rectum.

These authors, also, have called attention to the fact that the only value of this method is due to the respiratory gymnastics which it necessitates. So also in Russia, Weigert's method has been proved to be unaccompanied by any utility; while, on the contrary, it has even been shown that the inspiration of extremely hot air is by no means free from danger, and is a procedure which should be absolutely discarded from therapeutics.

In the discussion which followed this address, Dr. Constantin Paul stated that in all the different thermal stations where phthisis was treated, it had for a long time been recognized that when the air became highly heated it was necessary to cease all treatment, or the condition of the patient was greatly aggravated.

Dr. Verneuil, on the other hand, believed that this condemnation of this treatment was somewhat premature, since in his hospital practice he had made some experiments on local tubercular affections by means of very hot air, and his results appeared sufficiently brilliant to encourage their further trial. He also stated that his assistant, Dr. Clado, had for three years been employing inhalations of hot air in laryngeal phthisis. In one case the patient was regarded as actually cured. He had always well separated the inhalations, although, of course, it must be admitted that the temperature of air in contact with the larynx must necessarily be much higher than after it has penetrated to the pulmonary alveoli.

PULSATION IN THE UVULA AS A SIGN OF AORTIC INSUFFICIENCY.

In ordinary conditions of health there is no pulsation in the soft palate or uvula that is visible on simple inspection, so that when such a pulse is present it may, as a near constant rule, be taken as a sign of disease. In a recent memoir (*Charité Annalen*, xiv, 1889), Dr. F. Müller, of Berlin, has reported a case in which he observed rhythmical pulsations of the soft palate. The case was one of aortic insufficiency. A slight attack of pharyngitis led to an inspection of the throat, when it was seen that with each carotid pulsation the tonsils and pillars of the fauces moved slightly towards the median line, while the soft palate and uvula were somewhat lowered, so that there was a rhythmical contraction of the faucial opening at the same time that there was an increase in the redness of the mucous membrane. Inspection of the throat after the inflammation had subsided showed the pulsations still present, though somewhat less pronounced. His attention having been thus called to this peculiar condition, Dr. Müller searched for it in six other cases of aortic insufficiency, and found it four times in a total of seven cases.

In an article in the *Gazette Hebdomadaire de Médecine et de Chirurgie*, March 15, 1890, Dr. P. Merklen quotes these cases and refers to an observation of his own. The patient was a young man, who had a double mitral and aortic lesion, with marked hypertrophy of the auricle and left ventricle. The sublingual capillary pulse was distinct, and, in addition, the palatal pulse was very evident on inspection. This was more particularly marked in the uvula, which could be seen to swell synchronously with the carotid and radial pulses.

Although, as Dr. Merklen remarks, this sign can have no great clinical value as an aid to diagnosis, it would, nevertheless, be interesting to learn with what constancy it is present in cases of aortic insufficiency, and whether the pulsation is ever visible in any other conditions. Müller never observed it in any other cases than those of aortic insufficiency, and Merklen has also examined many patients without this condition, but failed to find any pulsation. It is certainly not present in cases of aortic insufficiency, for Müller look

it in four such cases, but could not detect it. The palatal movements are not caused by transmission of the carotid beat, but are probably produced in the same way as the capillary pulse seen under the finger-nails in cases with similar cardiac lesions.—*New York Medical Record*, May 31, 1890.

COLD BATHS IN MEASLES.

The Paris correspondent of the *British Medical Journal* (May 31, 1890) states that M. DIEULAFOY, at the Société Médicales des Hôpitaux, read notes of a case of measles, which he described as hypertoxic, and threatening the life of the patient, a girl, aged 16. Her condition suddenly changed on the sixth day; the temperature suddenly rose; the pulse was 130 to 140 per minute; a very small quantity of urine was passed, and delirium set in. These symptoms increased in gravity, and were accompanied by cardiac syncope. Although menstruation had commenced, the patient was placed in a cold bath 24° C. (75.2° F.). She was seized with a violent shivering fit, but the temperature immediately fell. She was kept in the bath for a quarter of an hour, and the improvement was manifest, notwithstanding the shivering fit, which ceased only when she was taken out. On the eleventh day the baths were discontinued; on the seventeenth day the temperature was 37° C. (98.6° F.). M. Duponchel has also treated two adult patients suffering from measles with cold baths. The temperature was above 41° C. (105.8° F.). Improvement was observed almost instantaneously. M. Huchard considers the important symptom in these serious cases of measles to be the syncope of the heart; for this he administers daily from 2 to 3 grammes of caffeine by hypodermic injection; he has for the last seven years adopted this treatment in infectious diseases, and found the results excellent. The caffeine should be tried before the bathing.

THE MODE OF ADMINISTRATION OF CARDIAC REMEDIES.

The therapeutics of cardiac affections has been greatly advanced recently not only in the addition of numerous cardiac tonics to our list of remedies, but also in the acquirement of important details in the administration of the older remedies, by which their efficiency has been greatly advanced.

GAUTHIER especially has devoted himself to the study of this subject, and an analysis of his work, as published in the *Wiener Medizinische Blätter* for May 22, 1890, is well worthy of notice.

As is well known, the administration of digitalis, in the form of powder or pill, is apt to produce vomiting or diarrhœa. The best form is that of an infusion made by macerating the digitalis leaves, and when time permits, it is this preparation which should always be used as the one which gives the most prolonged and intense action on the heart, and which is most efficacious in producing diuresis. The infusion should be given in gradually decreasing doses. Digitalin, as we have already in previous issues emphasized, is by no means a constant preparation, and it does not possess all the properties of the digitalis leaves. Nevertheless, the crystallized digitalin is of use where an extremely rapid action is desired, although ordinarily its action is too intense, and therefore dangerous, while its subcutaneous employment is extremely painful, and is apt to lead to the production of abscesses.

Convallaria is also best employed in the form of a maceration, 8 to 10 parts being macerated in 1000 of water, to which syrup may be added and employed the day in which it is made.

Convallarine, the active principle, may be employed in doses of 1/6 to 3/4 or 1½ grains.

Strophanthus is best employed in the tincture (the one officinal in the English Codex being the best) in 5-drop doses three times daily, although 10 to 20 drops may be given once or twice in the twenty-four hours in a single dose.

Adonis may be employed in the form of an infusion or decoction, or its active principle, adonidin, may be given. The infusion seems to be inconstant in its activity, and both of the watery preparations have an extremely bitter taste, which must be covered by syrup. Adonidin may be given in the quantity of from 1/6 to 1/3 grain in twenty-four hours. Its toxic action is ten times stronger than that of digitalis. Caffeine is likewise a reliable remedy, provided it is given in sufficient dose, ordinarily 15 to 30 grains being required. This dose should, however, not be exceeded without great care, as in larger quantities it is not free from danger.

The salts of caffeine are nearly insoluble in water, and are, therefore, not suitable for subcutaneous injections, although the double salts—the benzoate of sodium and caffeine—is an exceedingly valuable preparation. Spar-

Dr. Macfarlane knew of one case in Essex in which the treatment had been tried without good result.

Dr. Dawson Williams stated that Dr. Cranstoun Charles had tried it, and, he believed, with good results, though all the reports from America negatived the idea that good could be done by it.

So also at the meeting of the Academie de Médecine, held June 3, 1890, Dr. Dujardin-Beaumetz (*La Médecine Moderne*, June 5, 1890), stated that it was extremely important to do away with the delusions which had obtained a certain amount of credence among the general public, and even among physicians, as to the possibility of the cure of phthisis by treatment with hot air.

The idea originated with Weigert, who imagined that it would be possible to destroy the bacilli of tuberculosis while within the lung by the inspiration of hot air, but Mosso and Rondelli have shown that even when the air, at a temperature of 100° C., was inspired, when it reached the alveoli its temperature, as expressed by the author, was no higher than the air in the rectum.

These authors, also, have called attention to the fact that the only value of this method is due to the respiratory gymnastics which it necessitates. So also in Russia, Weigert's method has been proved to be unaccompanied by any utility; while, on the contrary, it has even been shown that the inspiration of extremely hot air is by no means free from danger, and is a procedure which should be absolutely discarded from therapeutics.

In the discussion which followed this address, Dr. Constantin Paul stated that in all the different thermal stations where phthisis was treated, it had for a long time been recognized that when the air became highly heated it was necessary to cease all treatment, or the condition of the patient was greatly aggravated.

Dr. Verneuil, on the other hand, believed that this condemnation of this treatment was somewhat premature, since in his hospital practice he had made some experiments on local tubercular affections by means of very hot air, and his results appeared sufficiently brilliant to encourage their further trial. He also stated that his assistant, Dr. Clado, had for three years been employing inhalations of hot air in laryngeal phthisis. In one case the patient was regarded as actually cured. He had always well separated the inhalations, although, of course, it must be admitted that the temperature of air in contact with the larynx must necessarily be much higher than after it has penetrated to the pulmonary alveoli.

PULSATION IN THE UVULA AS A SIGN OF AORTIC INSUFFICIENCY.

In ordinary conditions of health there is no pulsation in the soft palate or uvula that is visible on simple inspection, so that when such a pulse is present it may, as a near constant rule, be taken as a sign of disease. In a recent memoir (*Charité Annalen*, xiv, 1889), Dr. F. Müller, of Berlin, has reported a case in which he observed rhythmical pulsations of the soft palate. The case was one of aortic insufficiency. A slight attack of pharyngitis led to an inspection of the throat, when it was seen that with each carotid pulsation the tonsils and pillars of the fauces moved slightly towards the median line, while the soft palate and uvula were somewhat lowered, so that there was a rhythmical contraction of the faucial opening at the same time that there was an increase in the redness of the mucous membrane. Inspection of the throat after the inflammation had subsided showed the pulsations still present, though somewhat less pronounced. His attention having been thus called to this peculiar condition, Dr. Müller searched for it in six other cases of aortic insufficiency, and found it four times in a total of seven cases.

In an article in the *Gazette Hebdomadaire de Médecine et de Chirurgie*, March 15, 1890, Dr. P. Merklen quotes these cases and refers to an observation of his own. The patient was a young man, who had a double mitral and aortic lesion, with marked hypertrophy of the auricle and left ventricle. The sublingual capillary pulse was distinct, and, in addition, the palatal pulse was very evident on inspection. This was more particularly marked in the uvula, which could be seen to swell synchronously with the carotid and radial pulses.

Although, as Dr. Merklen remarks, this sign can have no great clinical value as an aid to diagnosis, it would, nevertheless, be interesting to learn with what constancy it is present in cases of aortic insufficiency, and whether the pulsation is ever visible in any other conditions. Müller never observed it in any other cases than those of aortic insufficiency, and Merklen has also examined many patients without this condition, but failed to find any pulsation. It is certainly not present in all cases of aortic insufficiency, for Müller looke

it in four such cases, but could not detect it. palatal movements are not caused by smission of the carotid beat, but are prob- produced in the same way as the capil- pulse seen under the finger-nails in cases similar cardiac lesions.—*New York Medi- Record*, May 31, 1890.

COLD BATHS IN MEASLES.

The Paris correspondent of the *British Medical Journal* (May 31, 1890) states that M. DIEULAFOY, at the Société Médicales des Hôpitaux, read notes of a case of measles, which he described as hypertoxic, and threatening the life of the patient, a girl, aged 16. Her condition suddenly changed on the sixth day; the temperature suddenly rose; the pulse was 130 to 140 per minute; a very small quantity of urine was passed, and delirium set in. These symptoms increased in gravity, and were accompanied by cardiac syncope. Although menstruation had commenced, the patient was placed in a cold bath 24° C. (75.2° F.). She was seized with a violent shivering fit, but the temperature immediately fell. She was kept in the bath for a quarter of an hour, and the improvement was manifest, notwithstanding the shivering fit, which ceased only when she was taken out. On the eleventh day the baths were discontinued; on the seventeenth day the temperature was 37° C. (98.6° F.). M. Duponchel has also treated two adult patients suffering from measles with cold baths. The temperature was above 41° C. (105.8° F.). Improvement was observed almost instantaneously. M. Huchard considers the important symptom in these serious cases of measles to be the syncope of the heart; for this he administers daily from 2 to 3 grammes of caffeine by hypodermic injection; he has for the last seven years adopted this treatment in infectious diseases, and found the results excellent. The caffeine should be tried before the bathing.

THE MODE OF ADMINISTRATION OF CARDIAC REMEDIES.

The therapeutics of cardiac affections has been greatly advanced recently not only in the addition of numerous cardiac tonics to our list of remedies, but also in the acquirement of important details in the administration of the older remedies, by which their efficiency has been greatly advanced.

GAUTHIER especially has devoted himself to the study of this subject, and an analysis of his work, as published in the *Wiener Medisinische Blätter* for May 22, 1890, is well worthy of notice.

As is well known, the administration of digitalis, in the form of powder or pill, is apt to produce vomiting or diarrhœa. The best form is that of an infusion made by macerating the digitalis leaves, and when time permits, it is this preparation which should always be used as the one which gives the most prolonged and intense action on the heart, and which is most efficacious in producing diuresis. The infusion should be given in gradually decreasing doses. Digitalin, as we have already in previous issues emphasized, is by no means a constant preparation, and it does not possess all the properties of the digitalis leaves. Nevertheless, the crystallized digitalin is of use where an extremely rapid action is desired, although ordinarily its action is too intense, and therefore dangerous, while its subcutaneous employment is extremely painful, and is apt to lead to the production of abscesses.

Convallaria is also best employed in the form of a maceration, 8 to 10 parts being macerated in 1000 of water, to which syrup may be added and employed the day in which it is made.

Convallarine, the active principle, may be employed in doses of 1/6 to 3/4 or 1½ grains.

Strophanthus is best employed in the tincture (the one officinal in the English Codex being the best) in 5-drop doses three times daily, although 10 to 20 drops may be given once or twice in the twenty-four hours in a single dose.

Adonis may be employed in the form of an infusion or decoction, or its active principle, adonidin, may be given. The infusion seems to be inconstant in its activity, and both of the watery preparations have an extremely bitter taste, which must be covered by syrup. Adonidin may be given in the quantity of from 1/6 to 1/3 grain in twenty-four hours. Its toxic action is ten times stronger than that of digitalis. Caffeine is likewise a reliable remedy, provided it is given in sufficient dose, ordinarily 15 to 30 grains being required. This dose should, however, not be exceeded without great care, as in larger quantities it is not free from danger.

The salts of caffeine are nearly insoluble in water, and are, therefore, not suitable for subcutaneous injections, although the double salts—the benzoate of sodium and caffeine—is an exceedingly valuable preparation. Spar-

teine may be employed, either in the form of an infusion or decoction of the plant, or its active principle, sulphate of sparteine, may be employed, the latter being especially valuable for its action on the heart in doses of from ¾ to 4 grains, while the infusion is especially endowed with diuretic properties.

CALOMEL AS A DIURETIC.

At the meeting of the American Medical Association, held May 20, 1890, before the Section on Practice of Medicine, Materia Medica, and Physiology, Dr. George Fackler, of Cincinnati, introduced this subject by first reviewing its literature (*Medical Record*, May 31, 1890). It was of recent date and limited to the observation of few experimenters. The author related three cases of heart-disease attended by œdema, in which calomel, administered in doses of about 4 grains three times daily, usually continued four days or longer, caused decided polyuria and disappearance of ascites and œdema. In most of these cases digitalis and other of the older diuretics had failed. In a fourth case, in which the cardiac trouble was far advanced, calomel also failed to act as a diuretic. The drug, when administered in this manner, caused slight, sometimes severe, salivation and stomatitis. It was desirable that the calomel be retained as long as possible, in order that it might be changed into an albuminate, in which form it produced its action. His conclusions were as follows: 1. Calomel, and, in all probability, other mercurial compounds, possess diuretic action. 2. If given in proper doses, the effect of calomel becomes evident from the second to the tenth day. Continuation of the treatment during diuresis will not alter or increase the effect. 3. Its action is most marked in dropsies due to heart-disease. Its action in dropsies of hepatic origin is not to be relied upon. Pathological changes in the kidney prevent or abridge its action. 4. Small doses are of no avail. 5. The diuretic action, in all probability, is due to the irritating effect which mercury exercises during elimination upon the renal epithelium.

Dr. Caldwell, of Florida, had produced diuresis by bichloride of mercury, $\frac{1}{80}$ of a grain or more three times daily, in combination with muriate of ammonia, and had not been troubled by salivation. By eliminating the ascites and œdema, sleep was obtained and the appetite improved.

Dr. De Saussure, of Charleston, in treating a case of filaria, had observed diuretic effec from bichloride of mercury, and a 10-gra dose of calomel had been observed in Charl ton to produce a diuretic effect in certa cases of œdema due to heart-disease, but t action was not so long continued as wh administered in the manner described by t author.

A NEW DISINFECTANT.

At the last meeting of the Society Physicians of Vienna, Dr. Gerlach (*Pha maceutische Post*, June 1, 1890) stated th when the proper amount of an alkali boiled in a closed vessel with any fatty aci resin and animal oil, with or without the a dition of alcohol, evaporation being prevente a mass results, which, after cooling, possess the property of solubility in almost any pr portion in water and of preserving a cle solution.

Any of the higher phenols may be co bined in the formation of this preparatio The consistency of the preparation may var from that of a perfect fluid to that of a so soap. This compound is described by th author under the name of "lysol," and i stated to possess a greater power in destroy ing bacteria than carbolic acid, creolin, c carbolic-sulphuric acid, while it is almos free from any poisonous properties. Th author states that he has employed it wit considerable success in the treatment o wounds. It possesses no irritating prope ties, although when applied, in one to tw per cent. solution, to mucous membranes, i produces a slight sense of burning, which however, readily disappears. A 3 to 10 pe cent. solution is sufficiently concentrate for the treatment of wounds, and the autho claims that in such solutions all bacteria which are liable to be met with in wounds are, as a rule, destroyed in twenty to thirty seconds. In three per cent. solution it ha the properties of a soap. It forms a lather and is thus applicable for disinfection o the hands. It still remains to be seen whether this communication receives confirmation.

THE ACTION OF GELSEMIUM IN SOM LOCAL SPASMS AND NEURALGIAS.

In the *Journal of Nervous and Mental Di eases* for June, 1890, Dr. M. Imogene Ba sette states that for the last two years he h had considerable experience in the use

gelsemium, and has found that it seems to be serviceable in the treatment of some local spasms, some neuralgias, and of a few distressing and unpleasant head symptoms, such as a feeling of fulness, beating, and throbbing.

The most striking point, however, in Dr. Bassette's report is that the dose of the remedy, even of the same preparation, varies through wide limits for different individuals. Among the cases referred to is one of spasmodic torticollis, the spasm being very severe in character, and being brought on or increased by walking, excitement, and by pressure in the left occipital region. It stubbornly resisted treatment by such means as potassium iodide and bromides, mercury, salicylate, arsenious acid, assafœtida, sumbul, blistering, and the actual cautery.

After the use of the fluid extract of gelsemium great improvement resulted, though it seems that during the treatment considerable unpleasant constitutional effects such as double vision and headache were observed.

For three weeks—from January 31 to February 21—this patient took for the greater part of the time 26 drops, or 13 minims, every two hours, night and day. For another part of this time, alternately, either 13 drops, or 7½ minims, every two hours, or about this amount. For the remaining forty-seven days she took about 13 minims eight times daily. The average taken daily, when the maximum amount was administered, was about one hundred and fifty-six minims. During three weeks—from January 31 to February 21—she probably took between five and six ounces, and during the last forty-seven days in all four thousand eight hundred and eighty-eight minims, equal to eighty-one ounces.

A case of this kind may be worth reporting, both on account of the great benefit derived from the use of gelsemium and as a study of the dosage of this drug.

A case is also related of painless tic or spasm of the muscles supplied by the seventh nerve.

The patient was placed upon the fluid extract of gelsemium, 2 minims four times daily, with directions to increase the dose until constitutional symptoms were produced. When 8 minims were reached she complained of dizziness, dimness of sight, and a feeling of intoxication; but, although some improvement was noted, the continuation or any increase of the dose produced such severe symptoms that treatment had to be discontinued.

Other cases are also alluded to, but, as already mentioned, the most interesting features in Dr. Bassette's report is the great variation in the doses required by different individuals to produce constitutional effects. Dr. Bassette offers as explanation of this, as perhaps analogous to the state of affairs in the case of opiates; for just as, as is well known, persons who suffer severe pain will support enormous amounts of opiates or other narcotics, so it is possible that in cases of local spasm long continued doses of gelsemium will likewise be tolerated.

Dr. Bassette also alludes to the fact that gelsemium habit is not formed, although the drug be taken in large doses for a long time, in this way perhaps explaining the reason for the continued production of unpleasant constitutional symptoms.

In neuralgia of the fifth nerve it would seem that both the therapeutic and toxic effects may be obtained with much smaller doses, for three cases are noted in which extremely small doses of the fluid extract of gelsemium produced decided relief from pain.

It would be a great gain if we could separate those cases of neuralgia in which the drug has a favorable action from those in which it proves inert or of but little benefit. In one case the patient complained of great facial pain, stiffness of the jaw, and pain in opening and closing the mouth. She was put upon 3 minims of the fluid extract, the dose to be increased, and by the time she had reached 6 minims the pain had disappeared, and the relief was probably permanent, as after several weeks she has had no return of the symptoms. In two other cases of ciliary and supraorbital neuralgia the pain was relieved by doses of 3 minims.

Gelsemium is a drug about which differing reports and differences of opinion are common. Cases of poisoning are reported, which show the small amount of this drug which will produce toxic or fatal effects. Boutelle (*Boston Medical and Surgical Journal*, 1874) reports a case of fatal poisoning in a man, aged 24, who took for neuralgia a teaspoonful of Tilden's fluid extract of gelsemium, and repeated the dose in fifteen minutes. Friedrich (*Philadelphia Medical Times*, December 30, 1882) reports the case of a girl of 14, who took a teaspoonful, and in less than an hour began to show physiological effects, later convulsions, and still later unconsciousness came on; but under active treatment she recovered. Sinkler (*Philadelphia Medical*

Times, January 5, 1878) reports the case of a woman who had serious toxic symptoms from taking 5 drops three times daily for ten days, the first dose having produced physiological effects. Dr. De Wolfe (*British Medical Journal*, vol. i., 181, p. 193), for facial neuralgia, took 10 minims of the fluid extract, and repeated this in half an hour. In less than fifteen minutes he was drowsy, and could not keep awake; he was taken with shivering, dizziness, and symptoms of collapse; but under the use of stimulants the unpleasant symptoms passed away.

THE ALBUMINURIA OF OPIUM-EATERS.

At the meeting of the Société Médicale des Hôpitaux, held May 9, 1890, Dr. Huchard stated that he had recently observed three cases of permanent albuminuria occurring in persons addicted to the use of morphine, which terminated in uræmia; and all the symptoms and history of these cases seem to point to the conclusion that this albuminuria was developed as a consequence of the prolonged abuse of morphine; and he further alluded to the fact, noted by Loewenstein, who has related six or seven similar cases, and succeeded experimentally in producing the same result in animals.

In order to explain the pathogenesis in albuminuria produced by morphine, the three following statements may be considered:

1. It may be produced by a special action on the medullary centres.

2. The albuminuria may be consecutive to the paresis of the nervous plexus surrounding the renal artery.

3. Albuminuria may be produced by anomalies of pressure which are capable of producing renal disease.

In order to explain the production of permanent albuminuria in opium eaters, this latter cause must be admitted; in fact, Dr. Huchard states that his researches have demonstrated that morphine is an agent which rapidly and thoroughly decreases arterial tension.

DIAGNOSIS OF GONORRHŒA IN WOMEN.

At the meeting of the North of England Obstetrical and Gynæcological Society, held April 18, 1890, Dr. Sinclair (Manchester) read a paper on the "Diagnosis of Gonorrhœal Infection in Women," of which the following is a summary (*Lancet*, June 7, 1890):

The condition of which this paper treats is more common occurrence than is yet admitte Many cases remain undiagnosticated by me ical practitioners and even by specialis hence the treatment remains unsatisfacto Since Noeggerath's essay appeared, and mo especially since Neisse's discovery of t gonococcus, so much attention has be given to the phenomenon produced by go orrhœa in the female that we have now almost or altogether established a clinical ty of the disease. From this it follows that wi an attention to the signs and symptoms, whi is perfectly practical for any medical prac tioner, there is no need in the consulting-roo to call in the aid of bacteriology. The dia nostic points are made out partly from th anamnesis, and partly by inspection of th indelible traces which an attack of blenno rhagia leaves on the female genitals. Th assistance to be obtained from the patient recollection of symptoms in a chronic or ob solete case is comparatively little unless th questions are directed to certain points an clear answers patiently elicited. As the disea frequently reaches the uterus, and even th tubes and ovaries, one of the most constan features is a change in menstruation. Fo the first time in the patient's history there i one menorrhagic period, or perhaps two, an after that menstruation becomes painful, o there is a marked change in the character o the dysmenorrhœal pain. Among the point mentioned as diagnostic of a former attac are the changes in the Bartholian glands o the orifices of the ducts, the persistent tur bid discharge from the cervix, and the change in the ovaries. Only two causes are know capable of producing the changes mentioned —either puerperal or surgical sepsis,—whic may be reckoned as one, or gonorrhœal inv sion. Several typical cases were describe these had remained undiagnosticated, t though they had undergone more or le prolonged treatment. Many varied, in t remoteness of the time of infection, fr three months to eighteen years.

Dr. Wallace said in years gone by gyn cologists had neglected this subject.

Dr. Alexander (Liverpool) said Dr. S clair's conclusions had surprised him. his experience at a large lock hospital, a also the largest lying-in hospital in Liv pool, he only remembered one or two ca of pyosalpinx in prostitutes. In private pr tice the symptoms described by Dr. Sinc were found most often after abortions labors. He considered inflammation of t

glands of Bartholin a good test for gonorrhœa; the uterus was affected only rarely.

Dr. Martin (Blackburn) thought that prostitutes seek advice early, and thus escape more than others; but the fact remained that prostitutes are, as a rule, sterile.

HYDRASTINE, BERBERINE, AND OTHER DERIVATIVES OF HYDRASTIS CANADENSIS.

Dr. Marfori publishes in the *Archiv für Experimentelle Pathologie und Pharmakologie* a series of researches as to the physiological action of hydrastine, berberine, and some of their derivatives (*Gaz. Médicale de Paris*, June 7, 1890).

He finds that injected into the veins of a dog, in the proportion of $\frac{1}{24}$ grain for every two pounds of body-weight, hydrastine produces a constant diminution in the volume of the kidneys, the intensity and duration of the effect being in direct proportion to the dose injected. The arterial blood-pressure is increased, as a consequence of small doses of hydrastine, $\frac{1}{10}$ to $\frac{1}{60}$ grain for every two pounds of body-weight. Occasionally there is a preliminary increase of blood-pressure, but this phase, when it exists at all, is transient.

In a dog weighing forty-six pounds an injection of a little less than ½-grain of hydrastine into the veins produced an increase of blood-pressure of about fifty millimetres, and a second injection of the same amount produced such an increase of pressure as to render its registry on a kymographion drum impossible. Large doses of hydrastine always produce manifest reduction in blood-pressure, alternating, however, with transient increases in pressure, coinciding with the changes in volume of the kidney.

Hydrastine in small doses increases the pulse; in large doses it produces an initial acceleration of short duration, soon followed by pronounced slowing; further, a point of considerable importance, the systolic contraction greatly increases in extent as a consequence of injection of small doses of hydrastine; as results of his studies, the author concludes that in certain doses this drug shows as its characteristic effect a considerable diminution in the calibre of the blood-vessels. The acceleration of the pulse which is observed after the administration of small doses of hydrastine is attributable to the excitation of the accelerator nerves of the heart. The slowing of the pulse consecutive to the administration of large doses is due to the excitation of the extra-cardiac centres of the pneumogastric nerve. Hydrastine acts as a stimulant to the nerve-centres, especially those of the spinal cord. In the dose of $\frac{1}{8}$ to $\frac{1}{4}$ grain for every two pounds of body-weight in warm-blooded animals it produced at first acceleration and then a slowing of the pulse, dyspnœa, tonic and clonic convulsions; a phase then of short duration follows, which is characterized by paralytic manifestations, and is again followed by a new stage of convulsions; finally, the animals succumb to the results of the paralysis. Hydrastine is endowed with a certain accumulative action. After being administered to dogs for many days consecutively in small doses it finally produces marked evidences of poisoning. This result is, no doubt, attributable to the slowness with which hydrastine is eliminated. Hydrastine is eliminated apparently exclusively by the kidneys. In the animals which were experimented on by Dr. Marfori no traces of hydrastine were found in the bile.

Berberine, which is considered as another active principle of hydrastine, produces in large doses an elevation in blood-pressure, which has been already recognized by Curci and Shurinoff.

The experiments of Dr. Marfori confirm this fact, though indicating that in small doses berberine is without any action upon blood-pressure, on the blood-vessels, or on the volume of the kidneys. In his experiments, when berberine and hydrastine were administered conjointly in small doses into the blood-vessels, the effects were the same as would have followed the administration of small doses of hydrastine, or corresponding doses of hydrastinine. It would thus appear that the administration of berberine is without influence in the consecutive effects of the administration of the two alkaloids. Finally, the results of Marfori may be regarded as confirming the results of clinical experience,—namely, that in hydrastis canadensis we have a remedy which possesses great value as a hæmostatic. From the experiments on hydrastinine, produced by the action of oxidation on hydrastine, Dr. Marfori concludes that hydrastinine, while possessing most of the physiological properties of hydrastine, is less efficacious in its vaso-constrictive influence and in its action on the intravascular pressure.

Hydroberberine, whose molecule contains four atoms of hydrogen more than the molecule of berberine, differs likewise from the

latter in its physiological properties. It produces a depression in blood pressure, even in animals in whom the pneumogastric nerves had been divided; but it does not produce an increase in blood-pressure when a division of the spinal cord is made below the medulla oblongata. This fact appears to prove that the elevation of the blood-pressure due to its action is attributable to stimulation of the medullary vaso-motor centres.

Opianic acid is another product of the oxidation of hydrastine, but it produces no appreciable physiological effects in comparatively large doses, either in frogs or in warm-blooded animals. It nevertheless possesses considerable action as a prevention of putrefaction.

Hydrastinic acid and berberinic acid, also products of oxidation of hydrastine, and of berberine, have likewise given analagous results.

ABORTIVE TREATMENT OF GONORRHŒA.

Two papers were read upon this subject at the Society of Practical Medicine in Paris on the 13th of February, 1890 (*Journal of Cutaneous and Genito-Urinary Diseases*, June, 1890).

In that by Dr. Malécot the treatment by injections of nitrate of silver was discussed. He regards the prejudice against the employment of silver as unfounded, if it is properly applied. Certainly the strong solutions are dangerous, especially if they are used several days in succession. They may provoke discharge of blood, and their too energetic action may compromise the subsequent elasticity of the canal. Furthermore, with the piston syringe the sphincter may be forced and the caustic be uselessly injected into the bladder. He therefore recommends the olive-bulb instillator, which is introduced as far as the muscular sphincter. The sensation of special resistance here felt serves as an indication that the instrument has gone far enough.

The patient first urinates, then the canal is to be washed out with a feeble boric acid solution, and then the instillation made, the first day in strength of 1 to 50, and the following days 1 to 100 or 1 to 150, the solution being retained in the urethra for two or three minutes. The irritant action is only of short duration, and affects only the epithelial layer of the mucous membrane. In the intervals between the acts of urination it is recommended to wash out the urethra with so antiseptic solution,—the permanganate potassium, resorcin, or bichloride, the lat not stronger than 1 to 10,000 or 1 to 20,00

Dr. Malécot has obtained excellent resu from the salicylate of mercury, in strength 5 centigrammes to 100 grammes of water, a temperature of 30° to 40° C. It is a stro antiseptic without being painful. Inter treatment is not wholly neglected, sandal c copaiba, etc., being given in the belief th they undergo a change in the economy means of which they become germicid Oppenheimer has shown that urine pass after the administration of 30 grains of c paiba sterilized silk threads charged wi microbes. He has also followed Dreyfaus the employment of salol, in daily doses of grammes, with the same object in view.

Following out this plan, an abortion of recent gonorrhœa often takes place, and wi out danger. Only violent inflammation of t urethra should cause one to suspend the tre ment. In some cases, without known cau the method fails.

In the second paper, by Dr. Picard (*Jou nal de Méd. de Paris*, March 9, 1890), t question as to the efficacy and harmlessne of abortive injections of the nitrate of silv are answered in the affirmative. If we exa ine into the action of a sufficiently conce trated solution of nitrate of silver we see th it acts upon the mucous membrane of t urethra just as the gonorrhœal virus act causing death and desquamation of th superficial epithelium. The difference b tween their actions and that which explai the efficacy of the treatment is the rapidi with which the silver works, destroying t epithelium at once, while the virus requir several days to effect the same result. T success of the treatment, therefore, depen upon the promptness of its application. should be made when the first symptoms ap pear,—that is to say, before the appearance of pus. In practice it is at the time that the patient feels an itching sensation in the fossa navicularis, and perhaps notices a clear drop at the meatus, that the treatment must be instituted. A red meatus, with the lips swollen and everted, turgidity of the glans, and great pain furnish contraindications to the employment of the abortive method. If these parts are normal and the pus is not too abundant and thick, the silver may still be used. The solution he recommends is that of 1 in 25 or 1 in 30. More concentrated it becomes cau tic, and the solid stick is not to be thought c

because it would leave a cicatricial stricture. The Langlebert syringe, throwing a recurrent stream, is recommended, but the author gives preference to the ordinary injection syringe. The pain occasioned is usually moderate. Twenty-four or thirty-six hours after the first injection, if the discharge persists, a second is authorized, provided the parts are neither red or painful.

THE ACTIVE PRINCIPLE OF JEQUIRITY.

A Dutch observer, DR. NICOLAI (*Lancet*, June 7, 1890), has been engaged in a series of observations directed to the elucidation of the question whether the irritant action of the seeds of the *Abrus precatorius*, or jequirity, is due to a non-organized ferment or to bacteria. He found that while a pure culture from the seeds produced no irritation of the conjunctiva, a chemical preparation in which there were no bacteria set up the inflammation characteristic of jequirity. He concludes that the active body is an amorphous ferment or "enzyme," which can be isolated in the form of a white powder. This substance caused conjunctivitis in four or five hours. Its activity was destroyed by a temperature of 180° C. when dry, but a three per cent. solution became inactive after being heated to 78° C. It was also rendered inactive by borax and by prolonged treatment with absolute alcohol. Chloroform, ether, and corrosive sublimate did not affect it. No resemblance could be traced between it and pepsin rennet or diastase. It appeared to have strong toxic properties, for when injected into the venous circulation in rabbits it rapidly proved fatal, causing convulsions and paralysis of the heart.

SANTONIN AND CASTOR OIL.

Having been called upon to dispense a prescription ordering santonin with castor oil, HERR REUTER was led to experiment as to their solubility relations, concerning which contradictory statements have been made. The result was (*Apot.-Zeit.*, May 10, p. 246) practically to confirm a statement by Professor Flückiger, that if finely-powdered santonin be heated with castor oil on a water-bath, even though vigorously shaken, it will not dissolve to the extent of more than four per cent., the greater part of which will crystallize out on cooling. Experiments with 1.15, 2, 2.5, 3, 3.5, and 4 per cent. of santonin showed that it was soluble in castor oil in these proportions when heated on a water-bath, but that from the 1.5 to 4 per cent. solution the santonin separated in handsome crystals on cooling. From the one per cent. solution prepared in small quantities there was only a very slight separation when reduced to a low temperature, but a solution prepared from .5 gramme of santonin to fifty grammes of oil remained perfectly clear and free from separation at a temperature of 15° C. during two days. A .5 per cent. solution remained absolutely clear at 15° C. during four days. The use of finely-powdered santonin and the application of heat are essential, as santonin added to cold castor oil sinks to the bottom, while the viscosity of the cold oil hinders diffusion by shaking. —*Pharmaceutical Journal and Transactions*, May 31, 1890.

INFLAMMATION OF BONES OF TYPHOID ORIGIN.

According to the Berlin correspondent of the *Medical Press and Circular* for June 4, 1890, HERR FÜRBRINGER introduced this subject at the recent Congress of Medicine. He remarked that the subject had never been regularly treated in any work, and that in treatises on typhoid the subject only came in for treatment as a complication, but it had been well described abroad, and especially by French writers. In 1885, Freund gave an account of the literature of the subject, and reported five cases of his own. In the preceding year seventeen cases observed by other authors followed, among which were eight by Ebermaier, who was the first to furnish proof that the affection owed its origin to the typhoid bacillus. The disease consisted in longer or shorter, slighter or heavier, attacks of periostitis and osteomyelitis of a suppurative or non-suppurative form. The attacks befall the most varied parts of the bony structure. A careful examination of the recorded cases show that a large number of the cases described must be excluded from the category of typhoid osteitis. The author had only observed the disease five times in sixteen hundred cases of typhoid fever. The most remarkable case was that of a boy of 7½, in whom, in the course of four months, seven outbreaks of the disease attacked ten different parts of the bony system. The boy recovered, and indeed began to mend from the day on

which the crisis of an attack of influenza occurred, the only good deed, the author remarks, he had ever witnessed from the miserable *grippe*. The other four cases were observed in the hospital Friedrichshain,—two boys aged 12, a man aged 21, and a woman aged 25. The last patient showed a pyæmic temperature curve, with rigors, although suppuration never took place. Disease of the ribs awakened suspicion of a hepatic abscess. Recovery took place in this case also, although the patient was at one time as good as given up. In the third case the trochanter and ischium were chiefly affected, the diagnosis as marked on the note of admission being coxitis. In the fourth case the skull was the part affected, in a rather severe but evanescent manner. The fifth patient died after cessation of the osteomyelitis from hæmatopyopneumothorax, in consequence of bursting of a necrotic collection in the lungs. The author preferred the term osteoperiostitis, as a separation of the osteitis from the periostitis was not possible. His cases confirmed the view of Ebermaier that the typhoid bacilli wandered from the medulla of bones to the periosteum. As regards symptomatology, he remarked quite striking exacerbations of pain, and the frequency of the occurrence of the disease without suppuration. Some of the suppuration cases were due to sepsis, scrofulous tendencies, advanced disease, and possibly improper treatment. Regression took place as in syphilis, but the tophi did not so completely disappear as in that disease.

THE SUCCESSFUL TREATMENT OF CHRONIC PURULENT EMPYEMA BY MEANS OF INJECTIONS OF CORROSIVE SUBLIMATE.

At the meeting of the Société des Hôpitaux, held May 30, 1890, Dr. Fernet read a report of the case of a man, aged 34 years, of alcoholic habit, who, on the 26th of May, 1888, was attacked with pleurisy of the left side. Eight punctures were performed at intervals more or less separated, and in June, 1889, the effusion became purulent. The patient's spirits became depressed, until at the commencement of this year he was a hypochondriac, and had to be taken to an asylum. At this time he had a fistula of the left side, which discharged daily a large quantity of pus from the pleural cavity. He had hectic fever and infectious arthritis. In March, 1890, thoracotomy was performed and a sac opened, which contained a considerable quantity of pus. On April 5 the pleura was washed out by means of a siphon, with a solution of corrosive sublimate of 7½ grains to the quart. Under the influence of this treatment, and without any symptoms whatever of mercurial poisoning, cure was effected, and the fistulous tract was obliterated, while at the same time the mental troubles disappeared.

MANAGEMENT OF HUMAN BREAST-MILK IN CASES OF DIFFICULT INFANTILE DIGESTION.

At the meeting of the American Pediatric Society, on June 3, 1890, Dr. T. M. Rotch, of Boston, in this paper gave an analysis of the human milk in a series of cases, during the time of healthy digestion, and also during its digestion in the infant, showing, at the same time, the bearing of the mother's health and habits, and the amount and quality of food taken, upon the character of the milk (*Medical Record*, June 14, 1890).

Physicians acknowledged that the maternal breast-milk (meaning thereby the average) was the best diet for the infant, but did not seem generally to fully realize the importance of their admission, for not infrequently they forbade the use of this food, and ordered a wet-nurse or hand-feeding, when the infant showed indisposition more or less marked, without taking the trouble to analyze the milk, or inquire into the reasons for its possible unwholesome qualities. Brief reference was made to the various conditions affecting the quantity and quality of the milk, such as the state of the mother's health, exercise, food, mental emotions, length of the intervals between the nursings, etc. The longer the intervals the greater the proportion of the watery elements. In a general way the milk could be looked upon in its normal condition as a secretion, yet as colostrum and under certain unfavorable conditions it took on to a considerable degree the character of an excretion. Marked variations in the milk were almost always shown in the amount of fat and albuminoids which it contained; and, consequently, we treated almost universally these elements. Meat and a nitrogenous diet increased the fats in milk, while a diet of fat had not this effect. The albuminoids were more difficult to deal with. To lessen them, he had found in practice the best means was, if the woman were in health to increase the amount of exercise, pref-

by walking in the open air. One or two hes a day was the walk required by the rage woman. In the diagrams presented, taining an analysis of the milk in several es of difficult digestion, there was usually increase in the amount of albuminoids, metimes up to or beyond four per cent., h or without a change in the fats, and tment which resulted beneficially to the tient had the effect of reducing the al-minoids. He had not known an abscess follow the use of the pump on the human ast, and exhibited a simple and efficient trument of this kind. If one had to deal h a case in which there was very poor k, this should first be made rich, and after-ds the constituents be altered as required. there were cases in which, in spite of fol-ing out the rules contained in the paper, were unable to manage the milk, and make itable food for the infant. Nor were there d limits as to the proportion of albu-oids and other ingredients that should be ent. Each case must be studied by lf.

THE CHEMISTRY OF GOUT.

At the meeting of the Royal Medical and urgical Society, held June 10, 1890, SIR LLIAM ROBERTS communicated a contribu-n to the chemistry of gout (*Lancet*, June 14, 90). In a paper recently read before the iety, the author adduced evidence to show t in the physiological state uric acid ex-d in the blood and urine exclusively as drurates, and that when it appeared in y other guise this was due to abnormal anges in the quadrurates. In that paper e changes were traced which the quadru-e underwent in urine, and which led up to e separation of free uric acid in gravel. In e present paper the changes were traced ich the quadrurate underwent in the od, and which led up to the deposition sodium biurate in gout. These latter anges were intimately connected with the operty possessed by the quadrurates of king up in alkaline solutions an addi-nal atom of base, and of being thereby nverted into biurates. A knowledge of is reaction permitted a coherent view to be esented of the succession of events which minated in a gouty paroxysm. In the rmal state the uric acid, which circulated the blood as quadrurate, was at once re-ved unchanged by the kidneys. But in gouty state, either from defective kidney action or some other cause, the quadrurate lingered unduly in the blood. The detained quadrurate, circulating in a medium which was rich in sodium carbonate, was gradually transformed into sodium biurate, which was almost insoluble in blood-serum, and was, probably for that reason, difficult of removal by the kidneys. Under these new conditions sodium biurate accumulated more and more in the blood, and, when the accumulation had reached a certain point, was precipitated in the crystalline form in the joints and elsewhere, thereby determining the occurrence of a fit of the gout. This view was based on a study of the reactions of blood-serum and synovia with uric acid and the urates. In the case of blood-serum, these depended essentially on the saline ingredients, of which the sodium salts exceeded all the other salts put together in the ratio of 7 to 1. A solution of .5 per cent. sodium chloride and .2 per cent. sodium carbonate was a fairly exact imitation of blood-serum in so far as its saline ingredients were concerned. And it was found experimentally that such a solution behaved with uric acid and the urates in the same manner as blood-serum itself, and in the same manner as a solution composed of all the salines of the serum in their due proportion. A solution was, therefore, prepared containing .5 per cent. of chloride of sodium and .2 per cent. of carbonate of sodium. This was called the "standard" solution. The behavior of uric acid and the urates with this solution was studied in detail, under varying conditions of time and temperature, and with varying modifications of its composition. The results thus obtained were then collated with those obtained with blood-serum in similar circumstances, and with parallel modification of composition. The results were considered under the following headings: As to the solubility of sodium biurate in the standard solution and its modifications, and in blood-serum, it was found that it dissolved in water at 100° F., in the proportion of 1 in 1100; but was almost insoluble in the standard solution and in blood-serum, and no addition made thereto, of potassium, lithium, or magnesium salts, whether alkaline or neutral, made the slightest difference. The solvent power of the standard was found to depend exclusively on the sum of sodium salts contained in it,—the nearer it approached to pure water the higher became its power of dissolving sodium biurate, and *vice versa*. The degrees of alkalescence had not the least influence. The

solubility of gouty deposits in serum was tested directly. Gouty articulations, encrusted with uratic deposits, were suspended in a large body of blood-serum; but the deposits remained unchanged even after immersion for many months. As to the behavior of uric acid with the standard solution and with blood-serum and synovia, uric acid was taken up freely by these media as a quadrurate; but after a certain pause—a few hours or a few days—it was again precipitated, often somewhat suddenly, in the form of crystalline needles of sodium biurate, exactly resembling those found in gouty deposits. This remarkable reaction was held to be analogous to the phenomena of the gouty paroxysm. In gout it was assumed that the blood became increasingly charged with uric acid, until, after a certain period of incubation, sudden precipitation of sodium biurate occurred, and the "fit of the gout" was declared. Then followed a prooess of recovery, with restoration of the blood to a purer state. In the artificial counterfeit a similar succession of events was observed: Impregnation of the medium with sodium quadrurate; a period of incubation, during which the quadrurate passed into biurate; somewhat sudden precipitation of sodium biurate; and, lastly, restoration of the medium to comparative purity. In studying this process three stages were distinguished: (*a*) Taking up of uric acid as quadrurate, or solution; (*b*) gradual conversion of quadrurate into biurate, or maturation; (*c*) deposition of the biurate in the crystalline form, or precipitation. The following results were arrived at as to the conditions which hastened or retarded the processes which culminated in the precipitation of sodium biurate: 1. Precipitation occurred earlier in synovia than in blood-serum. 2. Increased alkalescence of the media favored the stage of solution, but did not retard the stages of maturation and precipitation. 3. The addition of salts of sodium hastened maturation and precipitation. 4. The addition of salts of potassium, lithium, or magnesium had no effect either way, except potassium chloride, which appeared to retard maturation. 5. Maturation was hastened, and precipitation occurred much earlier at 100° F. than at the temperature of the room. 6. No circumstance exercised so decisive an influence on the speed of maturation, and on the time of advent and copiousness of precipitation, as the proportion of uric acid in solution. If the proportion of uric acid in solution was 1 in 2500, or over, there was observed in the middle period maturation, on the second or third da copious critical precipitation; but if the p portion was 1 in 4000, or under, the prec tation was throughout gradual and sca and postponed to the twelfth or fourtee day.

Dr. George Harley said that the auth had dealt with the biurates in a manner wh had thrown a considerable light on the s ject. Sir Alfred Garrod was the first to po out that gout was due to excess of uric a in the blood, and he also showed that acute paroxysm was due to the deposition uric-acid crystals in the cartilages. The posits had been looked upon originally as to the inflammation, but Garrod again shown that the deposits themselves cau the inflammation round the joints. He h that the study of chemistry would ultima lead to a true pathology, and the chemi of gout and of alcoholism were easy to low. The theory that gout had a neuro origin had been revived, but those holding seemed to ignore the fact that something m cause the neurotic state, and this was u acid. It was as much a poison as any oth poison introduced from without, and to c its results a neurosis was much the same to regard in a similar light the delirium atropine, the tetanus of strychnine, or paralysis of conia. The diseases produc by germs were due to the toxic mate which these germs engendered. He regard pathological life as a discordance in rhythm and force of physiological life. himself suffered from gout when between ei teen and nineteen, and he had fifty-six atta before the age of forty-two. One of his s was attacked when aged fifteen, and anoth two years younger, was also attacked wh he became fifteen. His family history show that a male had never reached the age thirty without being attacked with gout, b the females did not suffer, though two them had transmitted the disease to th sons. For treatment he had tried almo every remedy. Colchicum gave him su an intense headache that he could not ta it; one of his sons could take it, but t other could not. He found that he deriv the greatest benefit from doses of twe or thirty grains of iodide of potassium, fift grains of carbonate of ammonium, and fift of carbonate of sodium. He knew of a p tient who took quinine as a cure, and he hi self could take champagne during an attac provided it was not acid. He had used all

talis, and patients had got well with it, but whether because of it he could not say.

DR. HAIG was glad to find that the paper furnished chemical explanations for some of the results he had arrived at. He had shown that alkalinity increased the excretion of uric acid, while acids diminished it. Sir William Roberts had shown that alkalescence favored the stage of solution. When the acid was in solution it was probably carried to the kidneys and excreted. He took exception to the conclusion drawn from one of the experiments, —that in which a joint was suspended in blood-serum,—for this serum differed much from the liquor sanguinis, which in the body was constantly changing, varying in different men and with changes of food, etc. Further information was required as to the solubility of the various urates,—those of iron and lead were known to be insoluble,—and as to how salicylate of sodium increased the excretion of uric acid.

SIR WILLIAM ROBERTS, in reply, said he had confined himself to certain chemical results which bore on the fundamental part of the chemistry of gout, but there was something in gout other than the chemistry of the urates. It would appear that gout was in its essence a mode of nutrition, associated with an error in regard to uric acid. The gouty type of nutrition was a high one, and in transmission it was sometimes the error and not the high type which was transmitted. The chemistry of the urates was very mysterious; there were colloidal modifications of them which differed from the crystalline in their behavior. One practical outcome of the research was this, that if a patient were judged to be verging on an attack of gout he should not be allowed to take mineral waters rich in soda or lime salts.

SYNCOPE FROM CHLOROFORM.

According to the Paris correspondent of the *Medical Press and Circular* for June 11, 1890, at the Académie de Médecine M. LABORDE spoke on syncope from chloroform, experimentally produced in the laboratory, and which seemed to him to be analogous to what the surgeon witnesses on the operating-table. In certain animals, especially rabbits, M. Laborde was able easily to produce the syncope, it being sufficient to put a cork or a rag wetted with a few drops of chloroform to the nose. Almost immediately the heart of the animal stopped for several seconds, by reason of the irritant action of the vapors upon the nasal extremities of the facial nerve. If this nerve were cut, the phenomenon was never produced. If ether were used instead of chloroform, the syncope was less marked, and if chloride of methyline were substituted the phenomenon was not produced.

M. VERNEUIL said that what he affirmed some time ago he would repeat now, that experiments in the laboratory could not be of any use in aiding to avoid those accidents in man from chloroform which we meet with from time to time. The lesions met with in man, which form a contraindication to the administration of chloroform, do not, generally speaking, exist in animals. The only two patients he had lost under chloroform were both phthisical and in the second stage of the disease. M. Verneuil was, therefore, of opinion that the result of the experiments made on healthy animals could not reasonably be applied to man. He tried the different methods of administering the chloroform without deriving much advantage from them. Injecting morphine before giving the anæsthetic plunged the patient into a sleep, from which it was difficult to awaken him after the operation. As to the combination of atropine with morphine, he did not hesitate, in spite of the high esteem in which he held the physiologist who had proposed it, to pronounce it an innovation of an extremely dangerous character. Consequently he came back to the old method of using pure chloroform and the mask.

THE ACTION OF STROPHANTHUS.

DR. BUCQUOY has particularly studied the sphygmographic records of strophanthus action. He finds the strophanthus tracing characteristic: the ascent of the curve reaches a higher level, the line of descent falls more abruptly; in short, the characters of the collapsing or aortic regurgitant pulse are reproduced. Dr. Bucquoy's observations were on all varieties of valvular disease,—mitral, bicuspid, and aortic,—and on combinations of these lesions; further, he tried the effects of the drug on a case of fibroid kidney with arterial degeneration and hypertrophied left ventricle; also on a case of emphysema with "fatigued" heart, and on a case of "tachycardia," in which the hurried action was not dependent on valvular disease. His remarks are based on fourteen cases in all; but he states that he has had, during two years of

work with strophanthus, an experience of several hundred cases. The indication for strophanthus is in every case ventricular incompetence. The increased force of the ventricular systole caused by the drug is accompanied by a diminution in the frequency of the pulse and by an attempt at regulation, but in many cases the pulse remained irregular. Strophanthus action is best shown in cases of aortic disease, and for the reason that an increased ventricular beat must become more manifest when the whole force of the stroke issues through the aortic opening than when, through mitral incompetence, only part of this stroke reaches the pulse; moreover, the dilatation and hypertrophy of the heart in aortic disease being greater than in mitral disease, the former condition is better adapted to show increased force of action. Does strophanthus cause contraction of the arterioles? Dr. Bucquoy, from clinical experience, holds that it does not. He further quotes experiments of Dr. Emil Delsaux, of Liége, with Roy's oncometer as bearing out this view, since the oncometer tracing did not show any variation during the administration of strophanthus. The urine curve of strophanthus action follows the pulse curve. The influence of strophanthus on blood-pressure is not discussed. In cardiac failure Dr. Bucquoy asserts that strophanthus possesses the advantages of rapidity of effect, of sustained action, and of tolerance. It is, however, generally held to be less permanent in its action than digitalis.—*British Medical Journal*, June 14, 1890.

THE EFFECTS OF DIURETICS.

Several St. Petersburg degree theses this year deal with the subject of diuretics and their effects. Dr. Alexêeff finds that digitalis increases the excretion of water by the kidneys, but lessens that by the skin, the ratio of the total quantity excreted to that absorbed not being increased, and the effect of nitrate of potassium being much the same. Both these substances, too, raise the blood-pressure. Dr. Atlasoff, who has examined the effects of diuretics on the metamorphosis of potash, soda, lime, and magnesia, finds that both digitalis and nitrate of potassium increase the metamorphosis of soda in the body and its excretion by the kidneys, its absorption being promoted by digitalis and sometimes by nitrate of potassium. Digitalis increases both the absorption and metamorphosis of potash, but nitrate of potas... though it slightly increases the absorpt... diminishes the metamorphosis. Digitalis ... nitrate of potassium somewhat diminish ... absorption of lime, the former increasing ... the latter decreasing the metamorph... The excretion of magnesia by the kid... and its metamorphosis are somewhat ... sened by digitalis, but are generally incre... by nitrate of potassium, its absorption be... promoted by nitrate of potassium and us... retarded by digitalis. Dr. Bëlkoff finds ... the metamorphosis of chlorides, phosph... and sulphates is promoted both by digit... and by nitrate of potassium, the former ... exerting its effects for some time after ... day of its administration, but the latter ha... a more transient influence. Dr. Serezhni... finds that digitalis, when it has any effect ... the nitrogenous metamorphosis, tends to ... crease it. It always, however, improve... qualitatively,—*i.e.*, increases the metaboli... —*Lancet*, June 14, 1890.

MERCURIAL POISONING.

The Vienna correspondent of the *Me... Press and Circular* for June 11, 1890, st... that PROFESSOR HOFMANN has opened ... question in medicine that has recently brou... to the fore a good deal of talent from ... practical and theoretical domains of me... cine. Briefly stated, the case arose out ... the sudden death of a woman after the tr... ment with Plencki's solution, which cont... sublimate, alum, camphor, lead, spirit ... wine, and acetate of vinegar (?) in eq... parts. Hofmann holds that the death ... caused by the absorption of the sublim... Professor Kaposi thinks the mercury ... nothing to do with the cause of death, ... rather thinks the camphor is to blame. ... S. Ehrmann characterizes Plencki's solu... as a "baroque compounding of substances ... which little can be said and seemingly ... is known." The mixture is sometimes ... ployed as an antisyphilide, sometimes ... cutaneous irritant, and at other times ... anything. It is a mixture whose ingredi... are held in suspension by shaking, but w... allowed to stand a dense deposit is form... which is frequently the part used as the ... surface is poured off. This makes the a... cation difficult to analyze. No doubt th... is a large portion of the sublimate in sol... which is thrown away as inoperative, ... which cannot enter into the calculation

oning by absorption. The deposit ingre-
ts will be composed of the carbonate of
, with a small quantity of the acetate,
, which is insoluble in spirits with 1 part
sublimate, which will be the nearest com-
ation, as sublimate is soluble in 3 parts
spirits or 16 of water. Dr. Ehrmann
ks there is still enough of the mercury
to produce the eschar found on Hof-
n's patient. But the defence of Plencki's
tion is that the sediment is taken, which
n dries and lies like a crystal applied to
part. Dr. Ehrmann combats this defence
an experiment on the foot of a patient
re the skin is thick and obtains a similar
har. He admits, however, that the same
periment will not apply to a condylomata
the healthy skin, because the condylomata
always raised a few millimetres above the
n-trunks, and thus make it more difficult
application, but if the surrounding healthy
n be not protected, as assumed by Hof-
nn, it is quite compatible with absorption
d vesication of the part.

Dr. Ehrmann relates a similar case of a
man, aged 35, two months after a confine-
nt, where a similar occurrence took place,
life was preserved. He thinks with Pro-
sor Hofmann that such an irrational mixture
uld be deleted from our text-books.

Reviews.

E CLINICAL USE OF PRISMS AND THE DECENTRING OF LENSES. By Earnest B. Maddox, M.B., late Syme Surgical Fellow, Edinburgh.
Edinburgh: J. Wright.

We have read this brief treatise with much easure and profit. It comes at a most op-rtune time, since the attention of ophthal-ic surgeons is once more directed to the nical importance of a careful study of the omalies of the ocular muscles. Those who ve hitherto paid but little attention to this fficult and aggravating chapter in ophthal-ology, will find much satisfaction in the pe-sal of this little book; there are but one ndred and thirteen pages.

"Mathematical formulæ," the author states his preface, "have been suppressed, or rele-ted to foot-notes," so that a rusty mathe-tician need not approach the book with y feeling of dread. The geometrical and ptical properties of prisms and decentred nses, and a very satisfactory outline of the ost important clinical applications of pris-matic spectacles, have been given briefly but clearly. Many students, approaching the subject for the first time, will, doubtless, wish that many points had been treated with more fulness of detail, but to busy men, who are more or less familiar with the subject, this presents no objection.

It gives us pleasure to commend the book to our ophthalmic colleagues. S. D. R.

ARBEITEN DES PHARMAKOLOGISCHEN INSTITUTES ZU DORPAT. Herausgegeben von Professor R. Kobert, Kaiserlich. Russischem. Staatsrath. Parts III. and IV. Stuttgart: Verlag von Ferdinand Enke, 1889, 1890.

Our readers will remember that some time ago we laid before them a review or notice of the first two parts of Kobert's "Arbeiten des Pharmakologischen Institutes zu Dorpat." It gives us great pleasure to call attention to-day to Parts III. and IV. of the same work, one of them having the date of 1889, and the other that of the present year. Part III. is occupied by two long, elaborate, experimental papers, respectively devoted to the consideration of solvine and ricin. Mr. Ernest Kiwull, of Riga, discusses the so-called solvines, in the course of fifty-eight pages, and comes to the conclusion that, pharmacologically and toxicologically, as well as in their physical relations, these substances resemble the saponin bodies, and that Professor Kobert was right when he warned against their use as a vehicle for the application of medicinal substances to the skin. Possibly some of our readers are wondering what "solvine" is. Solvine is not one thing, but various things, the name being used for substances which are produced by the influence of concentrated sulphuric acid upon various fatty matters, or even free-fatty acids. Most important appears to be that solvine which is known in the trade as the "Turkey red oil" (on account of its connection with the color known as Turkey red), which has been especially investigated by the Swiss chemist, Müller-Jacobs.

Hermann Stillmark, of Reval, finds ricin, the poisonous substance contained in the castor-oil bean, and in various other euphorbiaceous seeds, to be an albuminous substance, a so-called phytalbumose which belongs to the group of unformed ferments, and has no relation with glucosides, hydracids, or alkaloids. The action of ricin upon the blood has been found by Stillmark to be very pronounced; in ordinary and defibrinated blood it produced a coagulation of the red blood-corpuscles and a delay in the throwing out of

the fibrin. The coagulation of the blood-corpuscles is made still more remarkable by the fact that the ricin has no coagulating properties upon myosin, or albumen of the egg. Upon a frog's heart the poison had no influence, nor did it seem to affect the isolated nerve-trunks. Indeed, the chief influence which it exerts seems to be upon the intestinal mucous membrane, the whole gastro-intestinal tract, but especially the small intestine, being thrown by it into a state of intense inflammation. One hundred and twenty-eight cases of poisoning in man, with eight deaths, have been collected by the author, who further calls attention to the fact that the chemist has at present no means of detecting in the body the presence of this substance, a substance which is as poisonous as arsenic, and can readily be obtained in quantity from the waste products of castor-oil factories.

The fourth brochure contains a short and beautifully-illustrated article by Abraham Grünfeld, in seventy closely-printed pages of sufficiently difficult German, upon the gangrene produced in the comb of the chicken by ergot. He finds that the fundamental change is a very evident hyaline degeneration of the arteriole walls.

Ernst von Hirschheydt ("Mit Zusätzen des Herausgebers") discourses concerning the crotonic acid of Buchheim, finding, apparently to his surprise, that croton oil seems to have very little influence in producing diarrhœa in the lower animals. This is in accord with the experiments which we ourselves made some time in the early part of this present century, before the snows of winter had cooled the ardor of a too active brain, upon elaterium. Over and over again we have seen enormous doses fail to purge dogs, even although sufficient to cause death in some way to us unknown.

Georg Jukna, of Kurland, wherever that may be, has offered up guinea-pigs, rabbits, dogs, rats, doves, cats, in a manner shocking to the nerves of Anglo-Saxon antivivisectionists, in order to determine what may be the physiological action of the substance known as condurangin, which by chemical tortures has been torn from the bark of the condurango, about as useless a drug as ever drew gold from the pockets of men and women doomed to die, but deluded by false hopes.

Condurangin, according to Jukna, contains at least two glucosides, one of which is scarcely at all poisonous, and the other a strong poison. On the isolated heart of the frog it has no action, nor did the drug, in the experiments of Jukna, exert any influ upon the blood-pressure in warm-blo animals, so that it cannot be consider heart or blood-vessel poison. The co sions which it produced in the frog found to be cerebral, as when the spinal was divided they did not occur belo point of section. Vomiting, which was ent in some instances, was believed to b to an influence exerted upon the nerve tres. Experiments made upon the perip motor apparatus indicated that the dru some influence, in first increasing the el insensibility of the nerves or muscles, finally lessening it. The intestinal seemed to be very little affected by co rangin, peristalsis not being increased, only some hyperæmia of the mucous brane being found after death.

Correspondence.

BERLIN.

(From our Special Correspondent.)

The nearer the season approaches in the physicians of Berlin will have the ple of greeting within the walls of their c their numerous friendly colleagues, the is the whole interest of the medical frate of the city, and, indeed, of all Germany, centrated upon the great National and I national Convention, with the view to making this Congress in every respect thy of a lasting place in the memory o participants. Berlin has never before at home an international world's expos that was more important, nor, in fact, tributed elsewhere towards the manage of greater international undertakings. A events, there will be held here in the mi of next month a great international co tion, for which the grandest preparation being made, and which bids fair to be important than any previous one here especially as many Americans have pro to be present. Still, the individual inte of these gentlemen may be widely diff from that of therapeutics, as the assemb to bring together representatives from whole world. Moreover, smaller internat conventions have been and still are often in Berlin, the terms *great* and *small* refe to their size rather than to their influ Still, as the preceding international co tions that have laid claim to greater phy

nt than this one have been few in num- and as this Congress will exert a greater ence, it is, therefore, plain that it is des- d to arouse a greater interest, not only ng the members of the profession but in public generally, and, at all events, to be ore importance than any similar one pre- ly held here.

n view of the fact that it has been an- nced that the wives of many of the mem- will accompany their husbands hither, practical and hospitable wives of some of most influential physicians of our city e united in making preparations for the ption of these ladies, and have passed lutions to receive them into their fami- especially during the time of the Con- nce, when their husbands will be engaged he consideration of deep and subtle ques- ns; to show them, moreover, the objects interest in Berlin, and thus to render their rt visit as useful and pleasant as possible. Similar preparations have also been made the male visiting members. To these lat- the pleasure-resorts of the city of Berlin ll not be so entertaining as the places con- ted with the history of medicine in the rman capital, and therefore every pains be taken to render them accessible. h member will receive here at the open- of the Congress, through "Das Medi- che Berlin," a gratuitous copy of a rt but complete guide-book, prepared er the auspices of the Organization Com- tee. Moreover, the guide-book will be slated into the three current languages he Congress,—viz., German, English, and nch,—and contains a map of Berlin, upon ch are plainly indicated the medical, sani- y, and hygienic conveniences, as well as hotels and squares of the various sections. e perfect and peculiar arrangement of the t renders it possible to locate immediately important public building. As the shape d size of the guide-book enables it to be ried in the pocket, it will serve to intro- ce its possessor, so that the members of Congress need not purchase any other *de-mecum*, different costly styles of which being prepared by other parties accord- to the older methods. Still, as the work ove contains very short notices, and, of rse, mostly those referring to convents d hospitals, it will be remembered that ry one who is more deeply interested in subject can acquire more extended in- mation about it by referring to the civil d municipal works, that will also be fur- nished by the authorities to the members of the Congress.

There will meet at Berlin at that time also another assembly,—the International Congress of Cremationists. With this object in view, there have already been procured numerous contributions, selected in part from valuable collections. Members from all parts of the world, as well as many physicians, have arrived. The committee of delegation, under the name of the Cremation Union, will contribute its part to other interesting subjects, as well as towards the Medical Congress, which will be in session at that time. The ashes of a man cremated in Gotha sixty-two years since, as well as those of a girl burned nineteen years ago, will be presented. Moreover, urns of metal, serpentine, and marble, carvings, and plain pieces of crematories, as well as copies and old articles from the Union Library, will be on exhibition.

The sanitary condition of Berlin is to be noticed as being relatively more favorable than heretofore. Of the previous diseases here present, only measles is to be mentioned. This may be still considered epidemic, and causes relatively a large number of deaths. Over three hundred cases are announced weekly. Some other diseases—cases of which require to be officially reported by the attending physician, such as small-pox, scurvy, diphtheria, puerperal, typhus, and typhoid fevers, cholera, and spinal meningitis—are present, but to a very limited extent. Only scurvy prevails to any degree, and more cases of diphtheria are found than should be. Of course, sporadic cases of the other diseases, with the exception of small-pox, cholera, spinal meningitis, and typhus fever, are always to be found in so large a city as Berlin; but still there is to be noticed rather more than a usual number of cases of these three latter affections.

Of the various recently-recommended medicines, I shall to-day mention the therapeusis of only two. First, in regard to the so-called orexin, recommended by Professor Penzoldt for loss of appetite. Out of five cases of this disease in which this remedy was exhibited, in four cases its use was followed by no appreciable effect, while in the fifth its administration *seemed* to produce a slight general improvement. Although the observations made from these five cases are not conclusive, yet it was really wonderful that the effect was negative in all of these invalids. In a medical journal of Vienna there was recently published an article by

which the value of orexin as a stomachic was rendered very doubtful, and, moreover, I myself, in the exhibition of the remedy for loss of appetite from various reasons, have observed no benefit following its use. Possibly a more extended trial may discover other more suitable fields of usefulness for the new medicine.

A brighter future seems about to dawn for another preparation that was recently recommended by Professor Stilling, of Strasburg. He has examined the germicidal qualities in the coloring-matters in aniline, and discovered that violet prevents infection and lessens already-existing suppuration, provided it be thoroughly applied over the infected area. In solutions of from 1 : 2000 to 1 : 1000 it is fatal to all known forms of bacteria. Moreover, as the violet of methyline is relatively not poisonous, this quality might enable it to be used advantageously in diseases of the eye, such as ulceration of the cornea, conjunctivitis, and blepharitis. It would also be the preparation to be used in general surgery, cutaneous diseases, and syphilis. Cœrulean tyoktanin, from the violet of methylene, discovered by E. Merck, in Darmstadt, is suitable for general practice, as golden-hued pyoktanin is for ophthalmic diseases. Before its use the surgical instruments are placed for a while in a weak solution of from 1 : 10,000 to 1 : 20,000. After the operation the wound is washed with a stronger solution,—say, 1 : 2000 to 1 : 5000,—the parts united with a silk ligature saturated with the solution of methyline, and the wound dressed with lint and cotton, likewise disinfected.

A physician in Frankfort, in 1887, tried methylviolet in diseases of the eyes, but came to conclusions exactly the opposite to those given above. In a surgical clinic in Berlin extended observations are being made with tyoktanin, in order to discover its instantaneous effects, the results of which will be given in my next letter. I may mention the effects that I have seen following its use as being simply wonderful. In wounds of the cranium, that were previously suppurating very much, there was found no signs of the pus saturating the bandage after it had been applied eight days. No odor was perceptible, and the irritation of the surrounding skin—as is so frequently seen from the use of iodoform, and which lessens its practical value in medicine—was not observed. The epidermis could be removed in large flakes, and underneath it was found another healthy epidermis. At all events, further examination in regard to the effect of these preparations is simply imperative.

BERLIN, June 15, 1890.

LONDON.

(From our Special Correspondent.)

An interesting communication was made to the Royal Society by Dr. Klein on the 22d of May relating to the etiology of diphtheria. The research will appear in full in the Report of the Local Government Board for 1889–90. From these separate and independent sources accurate information was obtained as to a disease of cats occurring at the same time as outbreaks of diphtheria. This disease killed the animals, and appeared to consist chiefly of an inflammation of the lungs,—a kind of broncho-pneumonia. This was the fundamental fact which led Dr. Klein to investigate the subject, and the questions which an answer was attempted to be given were as follows: Is this disease of the cat the same disease as diphtheria in the human subject? Is it caused by the same pathogenic micro-organisms? The second question was naturally investigated first, as its solution would lead to the answering of the first. Löffler, who first carefully separated the organisms in human diphtheria, described two bacilli, and although he himself was extremely doubtful whether one or either of these bacilli was the *fons et origo* of the disease, yet other and later observers, working on his line, showed that the organisms separated undoubtedly possessed pathogenic qualities, and produced symptoms closely resembling human diphtheria and its sequelæ such as paralysis. Great doubt, however, existed as to which of these two organisms was the pathogenic one, and this doubt seems to have been dispelled by Klein's work. He finds that the two kinds of bacilli may be separated by growing them on gelatin. The pathogenic organism grows on this culture medium in little mounds, which are characteristically shaped, since they are conical and ridged, like a pile of smaller coins placed on a larger one. The other bacillus, according to Klein, does not possess pathogenic qualities. The bacillus which grows on gelatin when inoculated into mice produces a rapid death in twenty-four to thirty-six hours. In cats the introduction of this organism into the body produces a local lesion, which tends rapidly to become necrotic. The animal if it recovers from the first effects of the in-

on, then develops lung symptoms and
h. The post-mortem appearances pre-
ted by these animals who die after five
six days are very characteristic. There
the local lesion, in which there is seen in-
mmatory œdema, with more or less
crosis of the surrounding tissues; the
gs are solidified in parts, and show the
racteristic morbid appearances of broncho-
monia, and the kidneys are enlarged and
w an extreme degree of fatty degenera-
n. If the organisms are subcutaneously
culated, the bacilli are only found in the
al lesion and not in the other lesions—
gs and kidneys—of the disease nor in the
od. If the inoculation be through the
hea into its cavity, no false membrane is
duced, but the animal dies of broncho-
monia, and in the microscopical sections
he lungs the organisms are found. These
lts in cats correspond to what Löffler
others found in human diphtheria, in
ch the organisms are found only in the
e membrane and near its surface, and not
he blood or in any other part of the body.
e conclusion is, naturally, that the general
ptoms of diphtheria are due to a chemi-
poison manufactured by the bacillus in
false membrane or other local lesion.
e disease and lesions just described as
ed by the bacillus, separated from human
htheritic membrane, is the same as that
ch is found in cats who become ill with
eculiar disease when diphtheria is epi-
ic; and, moreover, from this natural
ase in cats, the same bacillus was found
separated as in human diphtheria.
ere seems no reasonable doubt, there-
e, of the identity of the two diseases, an
tity which is well confirmed by the re-
rkable kidney lesion observed in the cats.
Important, however, as this connection of
domestic cat with the etiology of diphthe-
, the experiments on the action of the diph-
ria bacillus on cows are, if anything, more
portant. Many sanitary officers who have
vestigated epidemics of diphtheria have
me to the conclusion that milk may be a
hicle for the transmission of the poison.
hether the milk derived its infection of
phtheria from the cow itself or from a case
human diphtheria is, on the face of it, an
important question. Dr. Klein inocu-
ed two cows with the diphtheric bacillus,
d found that they exhibited symptoms
actically similar to those already noticed as
urring in cats,—viz., a local œdema and
rosis of the soft tissues, with a subsequent broncho-pneumonia and fatty degeneration of the cortex of the kidneys. The cows, however, exhibited neither symptom. Inflammatory vesicles developed on the teats and udder of the animals; these rapidly became pustular and scabbed over. These vesicles, therefore, resembled cow-pox, and indicate, what was often suspected, that there are probably several distinct diseases included under the term cow-pox. However this may be, and it is a matter for future research, the fact had, previously to Klein's researches, been noticed that in these epidemics of diphtheria, where the source of infection was traced to the milk-supply, an eruption on the udder like cow-pox had been noticed. The vesicles and ulcers contain the diphtheritic bacillus: does the milk also contain it? In the cows experimented upon by Dr. Klein, the milk was withdrawn with all antiseptic precautions, care being taken that the vesicles, etc., were not touched. The milk as obtained was found to contain the same diphtheritic bacillus that had been subcutaneously injected into the animal. We have here, then, a possible explanation of the mode by which a disease of the cow can convey to the milk the poison of diphtheria. That the milk so obtained in Klein's experiments was infective was shown in a curious way. The attendant was told to throw the milk away, but, instead of doing this, he gave it to two cats, which were then in the laboratory (Brown Institution). Both these cats died, and not only so, but they infected over a dozen cats which were in the same room with them, and these cats had the typical diphtheria of the cat. This natural experiment is naturally very important; but a crucial test will have to be applied by feeding healthy cats directly with the milk derived from a cow suffering from diphtheria, and seeing whether they succumb to the disease.

These researches are an important contribution to the etiology of diphtheria, and will, no doubt, open up the way to the extended sanitary reform of dairies.

Notes and Queries.

THE LAST OF OREXIN.

Orexin may now in all probability be relegated to the obscurity which it seems to deserve. We have already published the testimony of several independent observers who have failed utterly in obtaining any ac-

tion from this substance, which is claimed to possess remarkable powers as a stimulant to the appetite. Still another paper, pointing in the same direction, has been published by DR. GEORGE MÜLLER in the *Therapeutische Monatshefte* for June, 1890.

He has tested its use in five different cases, in all of which orexin proved to be absolutely inert. Of course these five cases in themselves would not be sufficient to detract from the reputation of an established remedy, but when they are taken in conjunction with the number of other cases which have been reported, it seems that further studies with this substance are uncalled for.

PEPTONES OF MEAT.

Meat that has gone through the process of complete peptonization is now recognized as a valuable agent in cases of weakness and debilitated digestion. The value of such a preparation depends, of course, upon the presence of well-defined bodies, chief of which are peptone, albumose, and gelatin, along with other soluble and predigested albuminoids. A method, which has for its object the determination of the amount of these constituents, has recently been communicated to the *Revue Internationale des Falsifications*, Part X., p. 169, by M. ALPHONSE DENAEYER. The difficulty hitherto, it appears, has been to isolate the gelatin-chondrine, as the author calls it. The albuminoids are more or less closely allied, and but few reagents precipitate one apart from the other. The separation, however, may now be brought about, so the author claims, easily and with comparative rapidity by adopting the following briefly-sketched plan: 1. Precipitation of the peptone of meat with the double iodide of mercury and potassium, which throws down only the albumose; the filtrate after concentration is then treated with excess of saturated solution of ammonium sulphate, and the mixture gradually brought to boiling heat. This results in the coagulation of the gelatin upon the walls of the vessel containing it. Rapid washing with cold water removes the small quantity of entangled iodide, but still leaves a little sulphate. It is then dried and weighed, and subsequently dissolved in hot water, and the ammonium sulphate determined by means of standard barium chloride (normal), and deducted from the first weight found. This is apparently the novel feature of the method. 2. Precipitation with saturated ammonium sulph which gives albumose and gelatin. Both thrown upon a tared filter, washed with sulphate, dried, and weighed. The adhe sulphate is determined as in the first c and deducted. 3. Preliminary treatment 95° alcohol to take up creatine, creati urea, sarcolactic acid, etc., the amoun which may be got at by filtering the alco evaporating, and weighing the residue. portion insoluble in spirit is dissolved in w and precipitated with phospho-tungstic a which throws down albumose, peptone, gelatin. These are dried and weighed o tared filter; the ash is afterwards de mined and the weight deducted. As will seen at a glance from these data, the amo of each constituent may be readily ca lated. Practice will show how far the met may be depended upon; it certainly app to be convenient in operation, and the aut has obtained results agreeing closely those obtained from the estimation of nitrogen. Appended are some of the res obtained, which give also an idea of the r tive composition of different commercial p arations:

Designation.	Peptone of purified meat albumen.	Peptone of egg albumen.	Pep direct mea
Peptone.....	37.675	34.700	25.8
Albumose.....	31.300	53.350	15.9
Gelatin.....	None.	None.	9.8
Definite compounds..	5.525	5.930	29.9
Mineral salts.....	8.285	1.025	18.3
Water.....	10.250	4.625	Non
Insoluble.....	9.965	3.980	Non

—*Lancet*, May 31, 1890.

POISONOUS AND DEFENSIVE ALBU MOSES.

The very interesting paper by Mr. E. Hankin, which was published in the *Jour* of October 12, 1889, will be remembered our readers; he succeeded in rendering m and rabbits immune to anthrax by treati them with an albumose obtained from cu vations of the anthrax bacillus.

Dr. Sidney Martin, one of the resea scholars of the British Medical Associati communicated to the Royal Society, on M 22, the results of a research commenced o a year ago, at the instance of the medi officer to the Local Government Board. Martin's research has been of a compreh

and thorough character; he has used as fluid in which to grow the bacillus a solu- of pure alkali-albumen made from serum, the addition of mineral salts having the position of the salts of the serum. After g allowed to grow for ten days or a fort- t, the bacilli were filtered off through por- in, and the fluid filtrate chemically exam- ; he found it to contain leucin and tyrosin, alkaloid, and three proteids, — namely, to- and deutero-albumose, and a trace of one. The alkaloid yields a strongly al- ne solution, and is a powerful base, read- forming salts with acids; its solutions reactions with certain of the ordinary for alkaloids,—namely, precipitates with spho-tungstic, phospho-molybdic, and spho-antimonic acids, and with platinic ride; the sulphate crystallizes in small dles or prisms, the oxalate in long branch- needles or flat plates. The two albu- es are strongly alkaline, and do not lose quality when treated with absolute alco- benzine, chloroform, or ether, nor when yzed for long periods. Their alkalinity, refore, appears to be an inherent quality, Dr. Martin suggests that this may ex- in their toxic properties, the alkaloid being nascent condition in the albumose mol- e. The bacillus he supposes forms the aloid from the albumose, while it is possi- that the living tissues have a similar ac- when the albumose is introduced into a g animal, for subcutaneous injection of albumoses produces the same effects as cutaneous injection of the alkaloid, only rapidly. If a mouse is injected with the hrax alkaloid it becomes ill immediately, ows more and more sluggish, and finally natose; about one two-hundredth of the dy-weight was found to be a fatal dose, ling in from two to three hours.

The lesions found after death were enor- us local subcutaneous œdema, with con- tion, and sometimes thrombosis of the all veins; the spleen was congested, and some cases much enlarged; occasionally itoneal effusion was present. The fatal e of the albumoses was from twice to ree times that of the alkaloid, and the ani- al survived for twenty-four hours or longer. e symptoms were the same: sluggishness ceeded by profound coma; there was local ema at the point of inoculation, and in e cases enlargement of the spleen. Cul- tion experiments made from the spleen wed that no organisms were present. aller doses produced a local subcutaneous œdema, with some sluggishness, ending in recovery. It ought to be added that boiling for a short time diminished, without completely destroying, the toxicity of the albumoses.

At the same meeting of the Royal Society, Mr. E. H. Hankin, who also receives a grant from the Scientific Grants Committee of the British Medical Association, reported the results of some extremely interesting and suggestive experiments which he has made, in the Pathological Laboratory of Cambridge University, on a proteid body extracted from the spleen and lymphatic glands of cats. He found that this body—a globulin—has the power of killing certain pathogenic bacteria. The globulin appears to be identical with Halliburton's cell globulin β, a substance which that author believes to be fibrin ferment. This globulin can be precipitated with alcohol, and dried without losing its germicidal characters. The method employed was the same as that used by Buchner when testing the bacteria-killing power of blood serum. Mr. Hankin's results appear to have a great theoretical interest, as shown by the conclusions which he draws from them, which are as follows: 1. That Halliburton's cell globulin β possesses a bacteria-killing power. 2. That this power appears to distinguish it from fibrin ferment. 3. That this bacteria-killing power is of the same nature as that possessed by blood serum, as described by Buchner, Nissen, and Nuttall. 4. That this power of the serum is probably due to the same or some allied substance. 5. That inasmuch as it is possible to obtain from cells that are or can become phagocytes a substance having bacteria-killing powers, we may suppose that phagocytes cannot only kill microbes that they have ingested, but also do this by breaking down and liberating their contents.

It is obvious that this discovery throws a new light on Metschnikoff's phagocyte theory, and points to an explanation of the *rationale* of pus formation. Apparently we are dealing with a natural antiseptic,—a substance produced by the organism to protect itself against microbes, and the question arises whether its administration can have an effect in modifying the course of the disease. Mr. Hankin's results in this direction, though entirely of a preliminary nature, are not without interest. Though in some cases an injection of cell globulin after anthrax inoculation produced no noticeable effect, in other cases the life of the animal was prolonged, and on its death the bacilli showed

different signs of degeneration, and many of them were included in phagocytes.

Mr. Hankin's work seems to indicate that in the conflict between the organism and the microbe both parties choose their weapons from the same armory,—namely, that of poisonous proteids.—*British Medical Journal*, May 31, 1890.

ANEMONINE.

According to the Paris correspondent of *The British Medical Journal*, for May 31, 1890, at the meeting of the Société Médicale des Hôpitaux, Dr. Bovet spoke of thirty-four cases of uterine affections that he had treated with anemonine, and has observed that in serious cases it acts as an energetic analgesic agent; in simple cases, such as difficult menstruation with or without leucorrhœa, the menstrual flow was induced at regular periods unaccompanied by pain. MM. Baz and Dormant have cured blennorrhagic orchitis with the same substance.

A CASE OF BILIO-BRONCHIAL FISTULA.

In *La Médecine Moderne*, May 15, 1890, Dr. Colvée describes a remarkable case of a man over 50 years of age, with a good constitution, and without any hereditary pathological antecedents, who was the subject of a fistula of the bile-ducts communicating with the bronchi.

In the previous history which is given of the case nothing very striking appears, he having in his youth suffered from hemorrhoids, in 1868 gastric fever, which was somewhat complicated by obstinate bleeding from his hemorrhoids, and congestion of the liver and spleen. He appears to have been very much prostrated by this attack, but in a few months entirely recovered, and since then has not been troubled by hemorrhoids. In 1875 he had an attack of pleurisy on the left side, and in 1885 intermittent fever.

The attack which is at present under notice commenced in April of the preceding year with bronchial catarrh, the expectorations after a short time being occasionally stained yellow, and although the cough diminished and the fever disappeared, yet the yellow expectoration occurred from time to time. The appetite and digestive functions were not interfered with, and the patient was able to continue his professional occupation.

On the 7th of October, during the ni he was suddenly attacked with acute pai the right hypochondriac region, extendin the epigastrium, with abundant bilious v iting and fever, which lasted for several d cough and expectoration augmenting c siderably, the expectoration being a quart a quart and a half a day. At the time of expectoration the sputum was yellow, orange-colored; but, after a few hours' c tact with the air, the superficial layers came greenish and the deeper layers were a reddish tint. The patient complained the bitterness of the sputum, and chemi examination showed the presence of b Occasionally the patient expectorated li black bodies, varying in size from that o grain of sand to that of a small pea. So times they were soft and readily crushed, possessed a red- or orange-colored inte These little calculi under Gmelin's test found to be biliary calculi, composed pri pally of bilirubin. Under the Pettenk test the sputa showed the presence of biliary acids.

Occasionally the patient eliminated coughing true biliary calculi considera larger in size than a pea, but they unfo nately were not preserved.

The first attack of this character lasted eight or ten days, and the fever and gas distress then gradually diminished and expectoration was reduced to the reject of a little yellowish sputa, although sy toms of chronic bronchitis persisted for eral months.

The fæces during this time were alm absolutely colorless, while the urine charged with urates and uric acid, but free from any biliary elements. During height of the attack expectoration was alm constant, and when improvement commen it then diminished in intensity, and the fæ now commenced to regain their normal co The cough appeared especially to be in enced by position, since a recumbent posit on the back or on the right side was sure produce extremely violent coughing. left decubitus was better supported, altho the erect position and leaning forward p duced the greatest freedom from coughin

Pressure on the right hypochondriac gion also produced coughing, and this cality was also the seat of dull pain. liver retained its normal volume, and heart and left lung appeared normal, altho there were signs of chronic bronchitis at base of the right lung.

bove case is certainly a great curi- medicine, since, as far as we know, e cases have been previously re- those of Cayley, Labulbène, and eld.

IPYRIN AND CARBOLIC ACID.

paper recently published by Messrs. and Stark, carbolic acid was men- s being incompatible with antipyrin. confirmed by M. TARDY (*Repertoire*, p. 209), who says that a solution of acid added, separated after some nto two layers. The upper layer, as limpid, having been decanted, was have only the taste of antipyrin, and contain any carbolic acid. It had a taste, a faint rose color, a slight odor l, and a specific gravity of 1.13; fur- as neutral to reagents, insoluble in nd soluble in alcohol and in ether.— *eutical Journal and Transactions*, May

---

ETIC ACID IN EPITHELIOMA.

ding to the Paris correspondent of *itish Medical Journal* for May 31, the meeting of the Société Médicale itaux, M. Arnogan related eight cases elioma of the face of sebaceous origin with acetic acid, with excellent re- Suppuration was arrested, and ulti- icatrization ensued. The patient can e treatment, and dressings are ren- nnecessary.

TREATMENT OF A RED NOSE.

rding to UNNA (*Lyon Médical*, June 1, dness of the nose is ordinarily due to sacea, accompanied by dilatation of od-vessels, and is frequently caused by cea, which must be combated by ordi- ans. When the case is one of simple sacea, Unna recommends the internal tration of ¾ of a grain of ichthyol, the same time prescribes lotions of ne substance dissolved in water. At e recommends the application of an nt composed of zinc ointment 20 parts, wder 5 parts, sulphur 2 parts. re vascular dilatation is a prominent t of the affection, Unna advises punc- the dilated venous trunks with Hebra's ent, the procedure to be repeated two mes a week.

In light cases, and as a supplementary treatment in severe cases, he advises the use of ichthyol soap, while warm water should invariably be used for washing.

THE THERAPEUTIC EMPLOYMENT OF ARMERIA VULGARIS.

The maiden pink (*Armeria vulgaris*, Willd.) enjoys considerable reputation in southern Europe as a domestic remedy, taken in the form of an infusion, 10 parts to 200, and has recently been subjected to study by DR. BRUNNER, of Buda-Pesth (*Pharmaceutische Post*, May 25, 1890) as a diuretic.

The author claims that the infusion of this remedy is of great service in the treatment of catarrhal affections of the kidneys and bladder, as well as in producing solution of renal and vesical calculi. It acts as a stimulant to the muscular tissue of the bladder and of the uterus, and is, therefore, indicated in the treatment of urinary concretions, hemorrhage of the bladder or of the uterus.

Dr. Brunner states that he has employed it with the most satisfactory result in such cases.

SALOL IN DISEASES OF THE GENITO-URINARY SYSTEM.

In the *Boston Medical and Surgical Journal*, DR. J. G. MUMFORD records several cases in which the internal administration of salol, in 10-grain doses three times a day, served as a prophylactic against catheter fever, and several consecutive cases of gonorrhœa cured by its internal administration in doses which varied from 2 to 10 grains three times a day.

SODIUM IODIDE.

At the last meeting of the medical faculty at Dorpat, DR. LABORDERIE called attention to the fact that sodium iodide occurs in commerce in three forms, containing very variable proportions of water of crystallization. The crystallized iodide contains twenty per cent., the "dried" from 7.5 to eighteen per cent., and that in scales six to ten per cent. Under these circumstances he thinks it not surprising that there should be considerable difference in the activity of medicines containing this compound, according as one or other of the varieties is used in dispensing, and he therefore recommends that only the crystallized iodide should be used, its compo-

sition being constant. It may be mentioned that the form of sodium iodide official in the Codex is in cubic crystals.—*Pharmaceutical Journal and Transactions*, May 31, 1890.

CHANGES IN FACULTY.

The following changes have been made in the Faculty of the Medico-Chirurgical College of Philadelphia:

Dr. J. M. Anders transferred from Diseases of Children to Clinical Medicine; Dr. Ernest Laplace made Professor of Pathology and Clinical Surgery, and Dr. Samuel Wolfe, Professor of Physiology.

BISULPHIDE OF CARBON IN DYSENTERY.

Dr. Jakobleff reports in the *Proceedings* of a Russian provincial medical society that he has found great benefit in dysentery from the employment of bisulphide of carbon,—of course, largely diluted. The quantity given per diem was from 3 to 5 grains in half a tumbler of water or milk, with a little peppermint. First of all, however, 1 or 2 grains of calomel were administered hourly until calomel stools had been induced; and during this time enemata containing 1½ grains of sulphide of carbon in 1½ ounces of water were administered twice daily. Great improvement was produced, and frequently this was as rapid as it was marked, so that there could not be any doubt that it had been brought about by the bisulphide of carbon treatment.—*Lancet*, May 24, 1890.

THE NATURE OF "NONA."

From his observations of two cases of so-called "nona," both of which were fatal, Dr. Tranjen, of Sistova (Bulgaria), believes that the affection popularly described under that name is really infective *cerebro-spinal meningitis* (*Berliner Klinische Wochenschrift*, No. 22). Both these cases exhibited coma rather than symptoms of cerebral irritation or paralysis. So-called "nona" would then be nothing but a cerebro-spinal meningitis of abnormal type, and the occurrence of such atypical cases after epidemics of influenza and pneumonia is, Dr. Tranjen thinks, easy of explanation. Even if the view put forward by A. Kühn, that influenza is not a disease *sui generis*, but only a rudimentary or larval form of pneumonia, be not accepted, it is yet a fa pneumonia is always largely increased influenza times. It may be that influe the power of modifying micro-organi their soil, so that the diseases excited b often nearly unrecognizable. Hence c spinal meningitis, which is, in its et closely allied to pneumonia, may *a pri* expected to be, like that affection, infl more or less by influenza.—*Lancet*, J 1890.

ANTIPYRIN AND ITS INCOMPATI

Messrs. F. J. Millard and A. Ca Stark recently reported before the Ch Assistants' Association of London the of a study of the effects of combinin pyrin with all of the articles of the Pharmacopœia at all likely to be dis with it, as well as other combinatio unofficinal articles. They give the fol list of incompatibles as determined b experiments:

Acid. carbolic., precipitated in stro lution.

Acid. hydrocyan. dil., yellow colorat

Acid. nitric. dil., faint yellow colorat

Acid. tannic., white, insoluble precip

Alumen (ammonia), deep yellow c tion, fading and precipitating.

Amyl nitrite (acid), green coloration.

Arsen. iodid., precipitate.

Chloral hydras, precipitates in strong tion; no apparent action in dilute.

Cupri sulphas, solution turns green.

Decoc. cinchonæ, precipitates.

Ext. cinchon. liq., precipitates.

Ferri sulph., brownish-yellow colo posits on standing, and solution turns r

Glycerinum acidi carbolici, precipitat

Glycerinum acidi tannici, precipitate

Hydrarg. perchlor., precipitates, sol excess of water.

Inf. catechu conc., precipitates.

Inf. cinch. acid., precipitates.

Inf. rosæ acid., precipitates.

Inf. uvæ ursi, precipitates.

Liquor arsenii et hydrarg. iod., p tates.

Liquor ferri perchlor., Liquor ferri pernit., Liquor ferri persulph., } blood-red c tion.

Liquor potass. permang., reduction place quickly.

Sodii salicylas (solid), liquefies.

Spirit. ætheris nitrosi (acid), green c tion.

Syrup. ferri iodid., reddish-brown coloration.
Tinct. catechu, precipitates.
Tinct. cinchonæ, precipitates.
Tinct. cinchon. co., precipitates.
Tinct. ferri perchlor., red coloration.
Tinct. gallæ, precipitates.
Tinct. gum rubri (*Eucalyptus kino*), precipitates.
Tinct. hamamelidis, precipitates.
Tinct. iodi, precipitates, soluble in excess of water.
Tinct. kino, precipitates.
Tinct. laricis, precipitates.
Tinct. rhei, precipitates.

Dilute Acids.—With dilute acids no apparent change takes place, as with sulphuric, hydrochloric, nitric, and phosphoric acids antipyrin forms soluble compounds (Gay and Prunié). This is well shown by dissolving antipyrin in excess in any of the above dilute acids. The solution then gives with ferric chloride a yellow coloration (or none at all) instead of the usual blood-red coloration, one of the tests for antipyrin.

The reaction said to occur when strong nitric or sulphuric acid is added to an alcoholic solution of antipyrin, we have not been able to obtain. Another statement we are unable to entirely confirm, is regarding the behavior of antipyrin with phosphoric acid. We find that boiling concentrated phosphoric acid, to which have been added a few crystals of antipyrin, gives only a faint straw coloration, whereas it has been claimed that it immediately blackens and yields an aromatic odor. This latter reaction, however, we have been able to obtain when using phosphoric anhydride, and the aromatic odor closely resembles that of salol.

Nitrites and Nitrous Acid.—The green coloration sometimes produced when antipyrin is mixed with spirit of nitrous ether has been frequently commented on. The green coloration is due to the formation of the compound isonitroso-antipyrin, a body having the empirical formula of $C_{11}H_{11}N_3O_2$ (that is, antipyrin having an atom of hydrogen replaced by NO). By the action of the acids upon this body, a small quantity of cyanogen is produced, and it is stated that unpleasant symptoms have been traced to a mixture of antipyrin and spirit of nitrous ether. According to reporters, the compound itself is inert, and the cyanogen formed from it, by the acids of the stomach, is produced in too small a quantity to be dangerous.

Isonitroso-antipyrin is only formed in the presence of free nitrous acid; a neutral spirit of nitrous ether may, therefore, be safely dispensed with antipyrin. But it should be remembered that ethyl nitrite is itself speedily decomposed by water, with the formation of free nitrous acid. We would, therefore, recommend that the occasional practice of prescribing the two together should be discontinued. The same remarks apply to commercial amyl nitrite.

Tinctures.—We found that no precipitation in any case took place with tinctures if a spirituous solution of antipyrin was employed, or if the salt was added to the tincture. The addition of water precipitated the antipyrin compound. In connection with the precipitation with astringent preparations, it should be borne in mind that antipyrin behaves with reagents exactly as an alkaloid, and is, therefore, precipitated by tannic acid and its congeners. The same observation applies to the astringent decoctions and infusions.

Chloral Hydrate.—The fact that chloral hydrate and antipyrin react with each other was pointed out some time ago by M. Blainville, and the reaction has since been studied by Herr Reuter.

From a number of experiments we are of opinion that this compound of antipyrin and chloral is not appreciably formed unless concentrated solutions are employed.

We conclude that the reaction is not complete in aqueous solutions, and does not appreciably take place if dilute solutions of the two bodies be employed. As the chloral-antipyrin is, according to Herr Reuter, physiologically inert, the question of its formation under the ordinary conditions likely to occur in pharmacy appears to us to be of some importance.

Mercuric Chloride.—When a solution of antipyrin is added to a solution of mercuric chloride a white precipitate occurs, soluble in excess of water. By employing concentrated solutions of the two substances, we have prepared a quantity of the compound of mercury and antipyrin. The specimen we exhibit is slightly soluble in cold water, more so in hot. It is soluble in alcohol, sparingly so, if at all, in ether, chloroform, and petroleum ether. We have been unable to crystallize it. The compound is, we believe, partially decomposed by water, the supernatant liquid from the precipitation of the compound giving at first no indication of the presence of free antipyrin (the mercuric chloride solution was purposely employed in large excess). On standing some time, however, it

gave the nitrous acid reaction characteristic of antipyrin.

The mercury still exists in the compound, even after a considerable space of time, in the mercuric state, and we have been unable to find any calomel present.

Ferric chloride produces with a solution of this compound a brick-red precipitate, soluble on heating and reprecipitated on cooling.

The most remarkable character of this body is its extremely low melting-point. This we find to be nearly 73° C. The melting-point of mercuric chloride is 265° C., while that of antipyrin is 110° C. The compound turns slightly yellow upon fusing, but appears to us otherwise to remain chemically unaltered.

Calomel.—As antipyrin seemed to us occasionally to act as an oxidizing agent, we thought it worth while to investigate its action with calomel. For this purpose the following mixtures were made and exposed to diffused sunlight for a month:

1. Calomel, 4 grammes; antipyrin, 4 grammes; intimately mixed and placed in an open vessel.

2. Calomel, 2 grammes; antipyrin, 2 grammes; hydrochloric acid, 5 cubic centimetres; and water, 50 cubic centimetres.

3. Calomel, 2 grammes; antipyrin, 2 grammes; water, 50 cubic centimetres.

Blank experiments containing the same proportions of calomel, water, and acid, and calomel and water, were made to Experiments 2 and 3.

On examination at the end of a month, No. 2 had turned distinctly yellow, the others remained unaltered in appearance. We were unable to find any mercuric chloride present in any of them.

Sodium Salicylate.—The fact that sodium salicylate and antipyrin react when in powder has been several times pointed out. No reaction appears to take place in solution.

Iodine.—When solution of iodine in iodide of potassium is added to a solution of antipyrin, a precipitate is formed, which disappears upon agitating the liquid, leaving a colorless solution, until a definite quantity of iodine is added, when the precipitate remains permanent.

A recent writer, M. Manseau, has suggested utilizing the reaction as a means of estimating the purity of a sample of antipyrin. Decinormal solution of iodine is employed, and the end of the reaction being indicated by the production of a permanent precipitate. We have examined this method, and find that the production of a permanent precipitate depends upon the degree of dilution of the antipyrin solution, and is practically valueless as an indication of the termination of the reaction.—*American Drug* June, 1890.

BUTYL-CHLORAL IN NEURALGIAS OF THE TRIGEMINAL.

The *Wiener Klinische Wochenschrift* says Butyl-chloral has been found to have a specific action upon the trigeminus nerve, which may be anæsthetized by from 1 to 3 grains internally. PROFESSOR LIEBREICH, of Berlin, prescribes it as follows:

℞ Butyl-chloral, gr. xl to lxxv;
Alcohol rect., f℥iiss;
Glycerini, f℥v;
Aq. dest., q.s. ad f℥iv.
Sig.—2 to 4 spoonfuls at once.

—*National Druggist*, June 15, 1890.

ABUSE OF PURGATIVES.

PROFESSOR SÄNGER, at a meeting of a medical society at Leipsic, spoke very strongly on the abuse of purgatives. He complained that not only did the public buy immense quantities of aperient pills, draughts, and waters, but that practitioners also pandered disgracefully to the craving for instantaneous relief from constipation, so common among patients. Quack laxative medicines were advertised in every newspaper, on walls, in stations, and on the trees and rocks in romantic districts of Europe frequented by tourists. The competition in invention of a new secret purgative was very keen. In this respect, a Polish doctor was not wise in his generation. This gentleman who, according to Dr. Säger, appeared to have no special anxiety about his patients' vermiform appendages, prescribed gravel, and boasted that he had already prescribed whole cart-loads; but a drug which anybody could scrape up in his garden could not be patented, and therefore would never gain the confidence of the public, who love mystery in purgatives as in other matters. Professor Sänger said that the abuse of these drugs caused not habitual constipation, but rather "artificial constipation." The evil was most prevalent among women with chronic pelvic diseases, real or imaginary. He ordered, in such cases, that all purgatives be discontinued. He never had bad results, even when constipation lasted for over a week. Belladonna was the

ly drug he ever used when flatulence, etc., t in, and when the constipation lasted for y long. He objected to dieting, which pt up a pernicious feeling of invalidism, d, finding that the patients drank little ter, he made them take several glasses of tered water daily, when fasting; occasionlly whey or buttermilk was given as a change. ruit, brown bread, and exercise were recomended. Professor Sänger found this treatent far better than massage, visits to water-g-places, enemata, and other familar means the same end. In the long run his patients d natural actions of the bowels, and were ured of their invalidism.—*British Medical Journal*, June 7, 1890.

DIURETIC EFFECTS OF GRAPES.

According to the Paris correspondent of the *Lancet* (June 21, 1890), Dr. Pecholier, of Montpellier, has published a note on the diuretic effects of grapes, which would appear to confirm the diuretic action of glucose recently brought to notice. In two cases—one a patient with cardiac disease and the other the subject of hepatic cirrhosis with ascites—a "grape-cure" was undertaken with the best results. In the former patient, notably, five pounds of grapes were daily ingested, in three parts, and the diuresis produced was much more considerable than with milk, digitalis, or iodide of potassium. This effect can only be attributed to the sugar of the juice of the grape, the other parts of the fruit having been rejected.

SUBSTITUTES FOR IODOFORM.

By the action of iodine on members of the phenol series in presence of an alkali, a number of homologous compounds can be formed, all of which have much the same therapeutical properties as iodoform. One of these, the iodide of diiodophenol ($C_6H_3I_2OI$), has been proposed by Messinger and Nortmann, under the name of "annidaline," as an efficacious and inodorous substitute for iodoform. It is formed by heating together solutions of iodine in iodide of potassium, and of phenol in caustic potash, in the proportion of 8 atoms of iodine to 1 molecule of phenol and 4 of potassic hydrate. There resides a dark-red amorphous precipitate, which, when dried, forms a fine powder without odor, insoluble in water and dilute acids, but soluble in alcohol, benzol, and chloroform. Aristol, another of these bodies, is the biniodide of dithymol, and is formed by acting on a solution of thymol in caustic soda, with iodine dissolved in iodide of potassium. It is a reddish-brown amorphous body without odor, and apparently non-toxic. Aristol is insoluble in water and glycerin, slightly soluble in alcohol, and readily soluble in ether. It adheres well to the skin, and is very convenient for employment in the form of powder. It has been used by Eichoff in lupus and psoriasis with good effect.—*British Medical Journal*, June 21, 1890.

LOCAL ANÆSTHESIA.

Dr. A. Dobisch, of Zwittau, has used, for the purpose of producing local anæsthesia, a spray, with Dr. Richardson's ether spray apparatus, composed of 10 parts of chloroform, 15 parts of sulphuric ether, and 1 part of menthol. After one minute's application of this spray, complete anæsthesia of the skin and neighboring tissues was obtained, which lasted for from two to six minutes, and sufficed for the performance of such minor operations as opening abscesses of the cervical glands, incising a deeply-seated whitlow, and the excision of an epithelioma of the nose. In all the cases in which he employed the spray above-mentioned the wounds healed quite satisfactorily.—*Lancet*, June 14, 1890.

MORPHINE AS AN ANTIDOTE TO ATROPINE.

A case of considerable interest occurred at Chadarghat, in Hyderabad, recently, and is reported in the *Medical Record* of Calcutta. A medical student, who was a great sufferer from neuralgia, for which he was accustomed to take antipyrin, went to indulge in his customary dose, but hit upon the wrong bottle, and took 6 grains of atropine instead. In a few moments he became unconscious and fell. He was seen by a brother medical student, who instantly ran off and called Surgeon-Major Edward Lawrie. An emetic was speedily given, and the stomach-pump used to wash out the contents of the stomach. The patient, however, seemed to be rapidly sinking from the effects of the drug. The pupils were dilated to their fullest extent, there were foaming at the mouth, stertorous respiration, and a rapid intermitting pulse. The condition seemed hastening towards the end, when Dr. Lawrie thought he would re-

sort to the antagonistic effects of morphine, and injected 1 grain of this drug subcutaneously, with no apparent effect. He then injected another grain, but with no decided result. The patient, though still alive, seemed hovering in the balance between life and death. From eight o'clock in the morning till three in the afternoon artificial respiration was resorted to with varying intervals of rest. Dr. Lawrie now determined to try the hypodermic injection of ⅓ of a grain of morphine, and this seemed to be the determining antidote, for in an hour the pulse improved, the breathing gradually resumed its normal stand, and consciousness returned.—*Lancet*, June 14, 1890.

IS REMOVAL OF THE TONSILS DANGEROUS?

Removal of the tonsils by the bistoury or guillotine is a popular operation in this country. The French are less partial to it, and MM. QUÉNU and LUCAS-CHAMPIONNIÈRE have recently dwelt on its dangers at the Paris Société de Chirurgie. The latter surgeon referred to two cases in Broca's practice where profuse hemorrhage followed removal of the tonsils. In one of these instances the patient, a medical student, died almost immediately after one tonsil was cut, so violent and uncontrollable was the bleeding. In a case in M. Lucas-Championnière's own experience the patient, a middle-aged man, had enlarged tonsils, quite free from inflammation, and he was not subject to any morbid condition liable to prevent the natural arrest of hemorrhage. On removal of one tonsil hemorrhage took place, and could not be checked until after two hours of digital pressure with a tampon soaked in ergotin. M. Quénu always uses the galvano-cautery three or four times, at intervals of a fortnight, and atrophy of the tonsil always follows. MM. Marc Sée and Chauvel do not dread the knife. There can be no doubt that hypertrophy of the tonsils requires active treatment, especially in youth; the evil consequences of neglect are well known. In the majority of cases the risk of dangerous hemorrhage is very slight; but the possibility of its occurrence should always be borne in mind, and the use of ice or of a styptic gargle should be enforced as a measure of precaution immediately after the operation.—*British Medical Journal*, June 21, 1890.

MENTHOL IN THE HYPEREMESIS OF PREGNANCY.

Hyperemesis in pregnancy is a grave complication. Within the last ten years Professor Horwitz, of St. Petersburg, and Dr. Graily Hewitt have written upon the subject. Dr. Copeman first published in the *Journal* of May 29, 1875, the famous case which he treated after the method to which his name has since been applied. "Copeman's treatment" signifies the relief of sickness by dilatation of the os and cervix uteri. The obstetrician's fingers are usually sufficient for the purpose. The treatment has been widely adopted; between 1875 and 1880 several experienced obstetricians contributed papers to our columns on successful cases, and for full information we refer the reader to the statistical tables published by Dr. Hewitt in the *Transactions of the Obstetrical Society* for 1884. Of course Copeman's treatment does not suit every case. Dr. Gottschalk recently described a case in the *Berliner Klinische Wochenschrift*, where, in a woman, aged 26, who had been pregnant three times, incontrollable vomiting set in during the second month of her fourth pregnancy. Neither cocaine nor Copeman's treatment availed, and the sickness continued until abortion was induced. The patient became pregnant for the fifth time, and the vomiting returned, hæmatemesis taking place. A draught, consisting of menthol 1 part, rectified spirits 20 parts, and distilled water 150 parts, was prescribed by Dr. Gottschalk, and a tablespoonful given every hour. The vomiting ceased after the third dose, and pregnancy proceeded to term without any further complication. A second case was successfully treated with menthol.—*British Medical Journal*, June 14, 1890.

FLUOROFORM.

From the *Monthly Journal of Pharmacy* we learn of the announcement by the French chemist, M. MESLANS, that he has succeeded in preparing fluoroform. It is the analogue of chloroform and iodoform, the chlorine and iodine of these substances being replaced by fluorine in fluoroform. But whereas chloroform is a liquid and iodoform is a solid at ordinary temperatures, fluoroform is a gas. It is colorless, and has a pleasant ethereal smell recalling that of chloroform.—*Lancet*, June 1890.

—THE—

Therapeutic Gazette.

Whole Series, Vol. XIV. | DETROIT, MICH., PHILADELPHIA, PA., | August 15, 1890. | Third Series, Vol. VI. No. 8.

CONTENTS.

Original Communications.

PAGE

On the Treatment of Affections of the Stomach. By Professor Dujardin-Beaumetz..... 505
A Research to determine the Action of Nitrous Oxide, Nitrogen, Oxygen, and Carbonic Acid upon the Circulation, with Especial Reference to Nitrous Oxide Anæsthesia. By H. C. Wood, M.D., and David Cerna, M.D..... 509
The Values, Relations, and Dangers of Anæsthetics. By G. Archie Stockwell, M.D., F.Z.S..... 515
Studies in Therapeutics—Cannabis Indica. By John Aulde, M.D..... 523

Leading Articles.

Cardiac Dyspnœa: Its Pathology and Treatment..... 527
The Analgesic Action of Methylene Blue..... 529
The Therapeutic Value of Electricity... 530
The Effects of Extirpation of the Pancreas and the Cœliac Plexus..... 531
Oxygen: Its Therapeutic History and Uses..... 532
The Therapeutic Properties of the Aniline Colors..... 533

Reports on Therapeutic Progress.

New Methods for the Treatment of Acute Gonorrhœa..... 535
The Prophylaxis of Contagious Diseases 536
The Physiology of the Recurrent Nerves 536
Treatment of Cystic Goitre, Ranula, and other Cysts with Chromic Acid..... 537
A Case of Extreme Slowness of the Pulse..... 539
Brain Surgery..... 540
The Influence of Cocaine on Muscular Contraction..... 541
The Abortive Treatment of Gonorrhœa 541
The Bromide of Ethyl as an Anæsthetic 542
The Properties of Sodium Silico-Fluoride..... 542
The Pharmacology of the Camphor Group..... 543
Hydronaphthol in the Treatment of Enteric Fever and of Diarrhœa..... 544
Treatment of Malignant Measles by Means of the Cold Bath..... 546
Physiological Action of the Active Principles of Jequirity..... 548
Action of Aristol in Ulcerations of the Skin..... 548
Indications for the Use of Glycerin Injections and Suppositories..... 550
The Action of Hot and Dry Air on the Temperature of the Lung..... 550
The Action of Sugars on the Organism 551
Treatment of Bubo..... 553
Treatment of Pneumonia by Cold Baths 553
Ether as a Menstruum in Medication by the Skin..... 554
Lactic Acid in the Treatment of Diarrhœa..... 555
Researches on a New Method of ascertaining the Digestive Power of the Gastric Juice without using the Sound 556
Therapeutic Effects of Heat on Syphilis 557
Aristol..... 557
Intestinal Calculus from Abuse of Vichy Water..... 558
The Treatment of Cystitis in Women... 558
The Subcutaneous Injection of Quinine, with a Case showing the Unusual Effects of the same..... 560

Reviews..... 561

Correspondence.

Berlin Letter..... 565
A Rare Complication of Whooping-Cough..... 567
The Subcutaneous Use of Morphine in Puerperal Convulsions..... 569

Notes and Queries.

Rhinoscleroma..... 569
Lanolin..... 570
Aural and Cutaneous Complications in Influenza..... 571
Potassium Tellurate in the Night-Sweats of Phthisis..... 572
Aristol in Ozæna..... 573
Santoninossime—A New Anthelmintic.. 573
Food Preservatives..... 573
Successful Removal of a Tumor in the Brain..... 574
The Solubility of Santonin in Castor Oil 574
Poisonous Effects of Exalgine..... 574
Treatment of Small-Pox..... 575
Mollities Ossium cured by Oöphorectomy..... 575
Salol Collodion..... 575
Solvents for Camphor..... 575
Table denoting the Number of Drops contained in a Gramme..... 575
Hydracetin..... 576
Dioscorea Villosa..... 576

Original Communications.

*ON THE TREATMENT OF AFFECTIONS OF THE STOMACH.**

LECTURE I.—HISTORICAL CONSIDERATIONS ON DISEASES OF THE STOMACH AND THEIR TREATMENT.

By Professor Dujardin-Beaumetz,† Paris, France.

GENTLEMEN:—I desire to devote my lectures on "Clinical Therapeutics" this year to the study of the treatment of affections of the stomach. This is a subject which has interested me not a little for many years, and I shall endeavor to state as briefly as possible on what bases your treatment should henceforth rest, and what are the new methods which you should follow in order to attain not only to the diagnosis but also to the prognosis of these affections.

By the importance which should be assigned to hygienic measures, and particularly to diet in the treatment of these affections, this study will be a complement to the lectures on "Alimentary Hygiene," "Hygienic Therapeutics," and "Prophylactic Hygiene," which I have already delivered in this amphitheatre, and I hope that you will derive from these instructions some

* From advance sheets, revised by the author (translated by E. P. Hurd, M.D.). Lectures delivered in Cochin Hospital, Paris, France.

† Member of the Academy of Medicine, Physician to the Cochin Hospital, Paris, France.

profit which will benefit you in your daily practice.

It may be said that it is only in the last twenty years that the study of the affections of the stomach has taken a truly scientific development. Do I mean by this to imply that physicians formerly did not know how to treat such affections? Not at all. But ignorant of the minute methods of examination of the digestive process, physicians of former times did not possess exact knowledge respecting the chemical changes which the food undergoes, and the modifications which pathological states impose on the digestive act.

The ancients, in particular, had been struck by the relation which exists between nutrition and the integrity of the digestive functions. Thus Hippocrates has left an aphorism which might serve as a motto for all our treatises on affections of the stomach; it is as follows: "What the soil is to the trees, the stomach is to animals." And further on he adds: "As a new cask leaks and an old one retains its contents, so the stomach transmits its nourishment, but retains the recrements." *

Another point which had engaged the attention of the ancients was the relation which seems to exist between certain nervous disorders and the troubles of the stomach. So they assigned to the hypochondriac regions the source of all these nervous ailments, and gave them the generic name of *hypochondriases*.

Read the following passage of Hippocrates, and you will be struck by the similarity which exists between this description and the neurasthenic states which we to-day associate with dilatation of the stomach: "Those who are affected with this malady (hypochondriasis) necessarily eat, and yet cannot bear the food which they take; their entrails make gurgling noises, and the orifice of their stomachs is the seat of pain. They vomit sometimes one sort of humor, sometimes another; they throw up bile, saliva, pituita, acrid matters, and, after having vomited, they seem to themselves to be better; but when they have again taken nourishment, they go through another course of belchings and eructations; they have headache, they feel prickling sensations over the whole body, sometimes in one part, sometimes in another, as though some one were pricking them with pins. This disease never leaves till old age, unless the patient dies from it before old age arrives" (*De Morbis*).

* "Works of Hippocrates," translated by J. R. Coxe. Philadelphia, 1846.

Galen, who was the medical authority [illegible] the whole world down to the seventee[nth] century, devotes an entire chapter to [the] affections of the stomach, and he repeats [and] insists on the sympathy which exists betwe[en] certain nervous symptoms and the disord[ers] of the stomach. "There are persons," [he] says, "who are not only taken with synco[pe] starting from the orifice of the stomach, [as] well as from the heart, but who also have [at]tacks of spasm, carus (*sopor caroticus*, the [last] degree of sopor), epilepsy, and melancho[lia] due to abnormal states of this orifice." Th[en] he cites the interesting case of a young gra[m]marian who was an epileptic, and the st[udy] of whose symptoms led him to think that [the] epileptic fits depended on troubles of [the] stomach; and this is the treatment which [he] prescribed: "I ordered him to devote [his] entire care to obtaining a healthy [and] regular digestion; to eat at the third [or] fourth hour (10 A.M.) a little bread [well] baked and wholesome, and without [any] drink, if he were not thirsty; if thirsty, [to] take a little water with a slightly astring[ent] white wine, for these wines fortify [the] stomach and do not go to the head like [the] strong wines; and with such a diet he [got] the better of his fits." This method of tre[at]ment resembles in many points, as you [will] that which we prescribe for dilatations of [the] stomach.

Moreover, this entire chapter of Galen fu[r]nishes material for meditation. It shows th[at] all parts of the stomach may be the point [of] departure of nervous troubles, and this is th[e] way the chapter ends: "Everybody knows that the act of coction (digestion) is accomplished in all parts situated below the orifice (cardia), so that this orifice, if its conformation be bad, becomes the cause of bad coction, when this latter does not result already from the disordered digestion of aliments of bad quality, or taken in excessive quantity."

It was on such data that medicine for ages was based, and we must come down to the sixteenth century before we see developing the first elements of a science which was destined profoundly to modify the views of the medical profession on diseases of the stomach. I refer to pathological anatomy.

Thus we note that a Florentine physician, Benivieni, abandoning the exclusive tradition of Hippocrates and Galen, published the curious observations which his practice furnished, and in a work issued in 1507, [a few] years after his death, entitled "*De abditis nonnulis ac mirandis morborum et sanationum*

nusis" (concerning some hitherto unknown and strange causes of diseases, etc.), we find very marked case of cancer of the stomach. But we must come down to the beginning of the eighteenth century, to Morgagni, before we have exact and precise notions as to the pathological anatomy of the stomach-affections. The physician of Forli completed the data which, almost a century before, a Genevan physician, Bonet, had compiled in his "Sepulcretum." We find in his letters numerous observations of cancer of the stomach.

At the same time that these anatomo-pathological researches were accumulating in special memoirs, there was introduced into the pathology of stomach diseases a word which was destined soon to include under its generic signification the greater number of affections of the stomach. I refer to the word *dyspepsia*, which, according to certain writers, originated with a physician of the sixteenth century, Jean de Boris. Physicians were then in the habit of using terms which were expressive of the same functional troubles, such as *bradypepsia* and *apepsia*, and you will recall to mind all the threats, which, in the "Malade Imaginaire," Purgon hurls at Argan for not following his prescriptions:

Purgon.—And I mean that before four days you shall be in an incurable state.
Argan.—Ah! pitiful heavens!
Purgon.—That you shall fall into bradypepsia.
Argan.—Monsieur Purgon!
Purgon.—From bradypepsia into dyspepsia.
Argan.—Monsieur Purgon!
Purgon.—From dyspepsia into apepsia.

But it was Cullen who, about the middle of the eighteenth century, carried furthest this extension of the word dyspepsia to all the affections of the stomach, by creating essential, symptomatic, and sympathetic dyspepsias.

If the pathology of the stomach was better understood, equal advance was not made in the treatment, which was even less rational than it was in the time of Galen, and the therapeutic management of affections of the stomach was too much abandoned to the grossest empiricism.

A reformer, who for a time produced a veritable revolution in the treatment of diseases, called anew the attention of the profession to the *rôle* of the digestive functions—I refer to Broussais. Broussais held that the stomach presides over all diseases, and he gave to his dogma the name of *physiological doctrine*. This systematic doctrine affirms that the majority of diseases depend on a gastro-enteritis; and that you may judge how far were carried the views of this over-zealous reformer, who then treated all these gastro-enterites by the antiphlogistic method, it will be sufficient for me to quote the following passage from one of his writings: "Syphilis is an irritation, and you may prevent its repeated assaults, which constitute the diathesis, by attacking it by means of local antiphlogistics, and especially by leeches."*

If, in fact, inflammation is, as Broussais taught, the grand factor which dominates pathology, blood-letting is the most efficacious means with which to oppose inflammation, and all therapeutics is summed up in the employment of antiphlogistics.

The doctrines of the reformer of Val de Grâce (as he was called) had a great vogue, and his son† thus describes the enthusiasm which attended their promulgation: "Broussais owed to no one but himself the elevated place which he so long occupied in science. Beginning his career as a soldier in medicine, he made himself, by the force of his genius, emperor, and from that throne, won by conquest and defended by battle, he promulgated those great truths which have revolutionized medicine."

But at the time of his death, which took place November 17, 1838, Broussais already saw his audience becoming smaller and smaller and his doctrine neglected. The clinical school, conducted by Andral, Louis, and Chomel, had indicated all the dangers attending the systematic medication of Broussais; and in what concerns us particularly, Chomel had shown on what basis should henceforth be established the treatment of the dyspepsias.

These authorities, in fact, included under this name of dyspepsia all the functional troubles of the stomach which do not manifest themselves to the eye of the observer by macroscopic lesions; and their followers soon passed over to the opposite extreme, and this, notwithstanding the reserves which Chomel had formulated in his Introduction and elsewhere:‡ "What I have said concerning the extreme frequency of dyspepsia will lead some to ask, if, after having constantly fought Broussais's system, I have not attained to views not altogether dissimilar to his, as he

* Broussais, "Examen des Doctrines," t. i.

† Casmir Broussais, "Treatise on Irritation," etc., 3d ed., p. 13.

‡ Chomel, "Des Dyspepsies." Paris, 1857.

himself saw gastritis or enteritis in almost all acute and chronic diseases." * Chomel cleared himself of this imputation by showing that he had no pretensions to act the part of reformer, and that he was concerned only with the dyspepsias called essential.

However, ten years later, in 1866, Beau overpassed the prudent limits imposed by Chomel, and spoke of dyspepsia as the origin of a great number of affections, and cancer in particular. He calls these the secondary and tertiary accidents of dyspepsia.

Nevertheless, with the progress of science, this word *essential* dyspepsia is destined to disappear from pathology. It, in fact, but conceals our ignorance, and when we become better informed by pathological anatomy, which is making progress every day, and when we are better enlightened as to the vicious fermentations of which the stomach is the seat, we shall be able to give to each one of those affections which are grouped under the name of essential dyspepsia a particular denomination, which will enable us to classify it among the diseases with known material lesions.

About the same time that Chomel published his work, which was the crowning achievement of his career (for he died a year later, in 1858), Corvisart, in 1854, introduced pepsin into therapeutics, a substance discovered in 1836 by Schwann and isolated in 1839 by Wassmann, and this discovery gave a new impetus to the study of the chemical acts of digestion.

Unfortunately, the experimental investigation of the digestive processes presented great difficulties. To carry them on, physiologists had no better means than the establishment of gastric fistulæ in animals, and these are very difficult to make. They had, indeed, been able to avail themselves of certain pathological fistulæ in man, but such cases were very rare, and Beaumont alone, in 1833, with his Canadian Alexis St. Martin, had obtained therefrom observations useful to physiology and therapeutics.

Physiologists had abandoned the method of Spallanzani, who, about a hundred years before, had taught the method of studying the modifications which take place in the stomach by introducing tubes containing various alimentary substances.

It is to Kussmaul that we are chiefly indebted for better means of investigation, for by applying the siphon to the treatment of affections of the stomach, he taught us how, from a clinical stand-point, to study the divers modifications which are effected in the stomach both of the well man and of the sick man.

Hence, from the time of the communication of Kussmaul, made to the Congress of German Physicians at Frankfort-on-the-Main, we have seen researches on the chemical acts of digestion multiply, owing to the employment of the stomach-pump, and our *confrères* beyond the Rhine have manifested a zeal in this direction which exceeds ours; and you will not fail to remark, by the developments which are to follow, how numerous and how important are their labors. But I must call your attention especially to those of Leube and Ewald.

According to this German school, of which Professor Germain Sée has shown himself the most zealous partisan and exponent, all the dyspeptic troubles must be referred to disturbances in the chemical acts of digestion, and Professor Sée has gone so far as to declare that "the gastro-intestinal dyspepsias are defective chemical operations." †

But along with these means, which are now put in operation in Germany, for the study, in a truly clinical manner, of the modifications which the gastric juice undergoes under the influence of pathological states, we find coming into prominence another doctrine, based especially on those clinical studies which have always made the success of our medical teaching; and Professor Bouchard, in 1884, showed us the important *rôle* which in a great number of affections belongs to dilatation of the stomach.‡ These clinical researches found in the discoveries of Armand Gautier on the ptomaïnes and leucomaïnes a striking confirmation; and Bouchard, taking for his stand-point these new doctrines, and basing himself on the great microbial discoveries of Pasteur and his pupils, has established the foundations of medical antisepsis, and, in particular, of gastro-intestinal antisepsis.

Thanks to these new methods,—the chemical and clinical study of the gastric juice, on the one hand, and, on the other, that of dilatation of the stomach and the knowledge which we have acquired of intestinal antisep-

* Chomel, *loc. cit.*, p. 5.

† G. Sée, "Des Dyspepsies Gastro-Intestinales," Introduction, p. 5. Paris, 1881.

‡ Bouchard, "On the Pathogenetic Rôle of Dilatation of the Stomach, and the Clinical Relations of this Disease with Divers Morbid States" (*Soc. Méd. des Hop.*, June 13, 1881).

is,—we are enabled to-day to make a new departure in the treatment of the stomachal affections. This will be the subject of my next conference, and I will begin by the study of the modification of the gastric juice, and of the means which the clinician may employ for the prosecution of this study.

A RESEARCH TO DETERMINE THE ACTION OF NITROUS OXIDE, NITROGEN, OXYGEN, AND CARBONIC ACID UPON THE CIRCULATION,

WITH ESPECIAL REFERENCE TO NITROUS OXIDE ANÆSTHESIA.

By H. C. Wood, M.D., assisted by David Cerna, M.D., Philadelphia, Pa.

Part I.

THE knowledge that we have of the physiological action of nitrous oxide indicates that it has no inherent anæsthetic properties, but that the loss of consciousness which follows its inhalation is the result of asphyxia. The arguments of this view are given in detail in Dr. H. C. Wood's "Treatise on Therapeutics," but may be summed up in a few sentences.

There not only is no proof that nitrous oxide has the power of yielding oxygen to the tissues of the body, but our present knowledge indicates that it escapes from the body unchanged.

Jolyet and Blanche, Elihu Thompson, and other investigators assert, as the results of experimental observations, *first*, that animals live no longer in an atmosphere of pure nitrous oxide than they do in one of nitrogen; *second*, that inhalations of pure nitrogen gas produce symptoms similar to those of nitrous oxide narcosis; *third*, that the introduction of oxygen makes nitrous oxide entirely capable of supporting life indefinitely.

The experiments of Jolyet and Blanche indicate that the phenomena which are produced by the inhalation of nitrous oxide are not due to any accumulation of carbonic acid in the blood, but to the deprivation of oxygen, which, *a priori*, would seem to be logically inevitable, since the inhalation of nitrous oxide stops the formation of carbonic acid by cutting off the supply of oxygen; but, so far as our present knowledge goes, has no effect upon the throwing off of carbonic acid.

The French experimenters just named, in their analyses of the gases of the blood during nitrous oxide anæsthesia, found that there was less carbonic acid at the time when the animal was unconscious than when it was conscious, but that coma did not develop until the oxygen in the blood was reduced to three-fourths per cent. This result in turn was confirmed by the experiments of Dr. Amory, who found that immediately after the recovery of consciousness from nitrous oxide narcosis, less than one-third the normal amount of carbonic acid was given off from the lungs. When to these various facts is added the statement, based upon personal experiment of Dr. MacMunn, that the arterial blood of the animal killed by nitrous oxide affords only spectrum lines of reduced hæmoglobin, the nature of nitrous oxide anæsthesia seems to be well established.

The assertion of Krishaber, however, that the circulation is affected very differently by the inhalation of nitrous oxide by mechanical asphyxia, seems to be contradictory to the other evidence, and has led the authors of the present paper to make an investigation of the subject.

Our first experiments were directed especially to a study of the changes in the pulse and blood-pressure produced by the inhalation of pure nitrous oxide. In discussing the experimental results obtained with nitrous oxide gas, we shall direct the attention of the reader, *first*, to the time which elapsed between the commencement of the inhalation and the development of complete anæsthesia; *second*, to the effect of the drug upon the rate and character of the pulse; *third*, to its influence upon the blood-pressure.

Anæsthesia.—The test which we employed to determine the presence of complete anæsthesia was the conjunctival reflex. When this was completely abolished, the animal was said to be completely anæsthetized. There were so many matters to be attended to in detail in these experiments, that it is entirely possible that in some cases the corneal reflexes may have been abolished a few seconds before a note of their non-existence was taken by us. It is certain, however, that in no case were the reflexes noted as abolished before they were completely gone. It is, therefore, very possible, indeed probable, that some of our periods are too long, but it is not possible that any of them are too short. The length of time which we found to elapse between the commencement of inhalation and anæsthesia varied from fifty-one seconds to three minutes and fifty seconds. In three out of the seven inhalations it was less than two minutes; in only one inhalation did

it distinctly exceed two and a half minutes. The average period was two minutes and eight seconds.

Pulse.—In our first experiment (Experiment 1) the inhalation of nitrous oxide was immediately followed by an enormous rise of the arterial pressure, associated with great disturbance of the pulse; the heart-beats became very irregular, with long diastolic pauses, some of them lasting several seconds, followed by a number of very rapid pulse-beats.

The animal (dog) was allowed to recover consciousness completely, and several minutes later the second inhalation was begun. Owing to a slipping of the canula there had been some loss of blood from the arterial system. The pulse-rate was 144 a minute; in ten seconds it fell to 108 a minute; in ten seconds more to 96 a minute. Then it began to rise, reaching, in the course of twenty seconds, 120 a minute, at which point it stayed until the gas was withdrawn.

In Experiment 2 the pulse-rate was slightly slowed, almost directly after the inhalation, but a pronounced descent did not take place until nearly one minute had elapsed, when the pulse rapidly fell to about one-third of its original number, with heart-beats which were most extraordinary in their power and in the size of the wave which they gave rise to. At the same time, when anæsthesia was noted as complete, the pulse was about 60 beats to the minute slower than it had been originally. It continued to fall, and fifty seconds later was below one-half its norm. Respiration at this time had become very distant and irregular. After the respirations had entirely ceased, and the animal, so far as respiration was concerned, was dead, the pulse-rate was about one-half of what it had been. The pulse-waves were two or three times as large as before the inhalation, this, too, although the arterial pressure had fallen almost to zero. The second inhalation in this experiment was made four or five minutes after the animal had regained complete consciousness from the previous inhalation. The pulse was at this time slowed to 108 a minute; but, nevertheless, while under the influence of the gas, fell steadily, being only 60 a minute at the time the respirations had been so reduced in number that they only recurred at intervals of ten to fifteen seconds.

In Experiment 3 the phenomena of the pulse were similar to those of Experiment 2, the pulse-rate falling at first very slowly and afterwards very rapidly, so that at the end of one minute and forty seconds it was less than one-half of what it had been. It then r temporarily, but at the time when artificial piration became necessary to keep the ani alive, it had fallen considerably below o half the rate it previously had been.

In Experiment 4 the pulse kept at about rate it was before the inhalation for abou minute and a half, when it began to fall a peculiar, very irregular way, and at the ti of complete anæsthesia it was a little un one-half of its normal number, and thoug varied after this somewhat in the rapidity its beat, by the time the respiratory cent were so paralyzed that it was necessary supply artificial respiration to restore the mal, the pulse-beat was 60 a minute. Wh the pulse had become this slow, the size the individual pulse-wave was enormous,— seven or eight times its original size. T second inhalation was made some minut after the complete restoration of the anim to consciousness. It was followed after thirt seconds by a decided fall in the rate of the puls and at the end of a minute the pulse was onl one-half what it had originally been. Whe anæsthesia was complete, the pulse was co siderably under one-half of its normal in fr quency. This inhalation was kept up unt death, and although at the last the pulse be came distinctly much more frequent, it neve reached a rate equal to the norm; a few second before death, when the arterial pressure wa less than half its original height, the puls wave was twice as large as the norm.

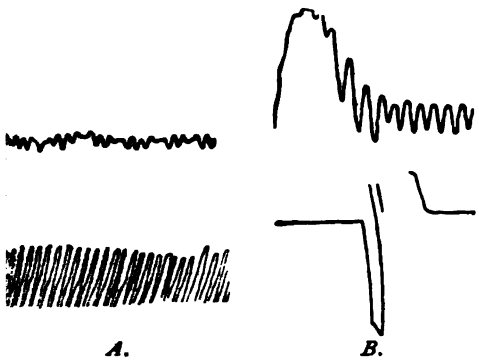
In their general results, so far as the effect of the inhalation of the nitrous oxide upon th pulse is concerned, the experiments which w have detailed are concordant. In one instance there was a stormy irregularity of pulse, bu usually under the influence of the gas th pulse falls very decidedly in number, whil the individual pulse-beat or arterial wave i enormously increased in size.

In order to show clearly this peculiar puls change, we append here tracings taken from one of our experiments, showing the highes size of the pulse-wave before inhalation and its size during a portion of the period o anæsthesia. (See Fig. 1.)

In order to determine whether the slowing of the pulse caused by nitrous oxide is due to an action upon the inhibitory centres, the ga was given to a dog whose vagi had been previously divided. Before the inhalation the pulse ranged from 150 to 160; five seconds after the inhalation it was 165; fifteen seconds after this it was 200. Shortly after this the a mal had such severe convulsive struggles that t

acing is excessively irregular, but in about forty conds more, or a minute after the inhalation d been entered upon, the pulse was 241 a min-e. Half a minute later it was 204, half a

FIG. 1.



A. *B.*

EXPERIMENT 4.—*A*, tracing before inhalation. *B*, acing when animal was profoundly anæsthetized and spirations reduced to 7 to 10 a minute. Tracing ows second marks; respiration, abscissa line.

inute later 228, one minute later 180, and thus t continued above the original point until the eath of the animal. Throughout the whole ourse of this experiment the pulse-wave was xceedingly small.

This experiment shows that the slow, huge ulse, so characteristic of the action of nitrous xide gas, is absent when the pneumogastrics ave been previously divided, and that it is, herefore, due to stimulation of the inhibitory ardiac apparatus.

Blood-Pressure.—The effect of the inhalation of nitrous oxide on the blood-pressure aried somewhat in the different experiments.

In Experiment 1, in both the first and econd inhalations, there was an immediate nd enormous rise of the blood-pressure, this ise amounting in the first inhalation to one undred and twenty millimetres in one minute nd twenty-two seconds after the commence-ent of the inhalation. In the second inhala-ion, the rise in a minute and twenty seconds as about sixty millimetres.

In Experiment 2 the blood-pressure went p moderately,—that is, about ten millimetres n twenty seconds,—and maintained itself at his position for about a minute, when it com-enced to fall, getting below the norm, but ecovering itself, so that by the time the anæs-hesia was complete the blood-pressure was the ame as in the commencement of the experi-ent. The continued inhalation of the gas as followed by a steady fall in the arterial essure, which was almost at zero. Artificial spiration was used to resuscitate the animal, which had long ceased to breathe. The second inhalation produced alterations in the circulation similar to but much less pronounced than those of the first experiment. There was a slight rise of pressure, followed by a fall, so that the blood-pressure was below the norm when the conjunctival reflexes were first noticed to be abolished. After this there was a remarkable rise in the pressure, which did not, however, quite reach the norm, and, after a time, fell again, until it was near the zero point.

In Experiment 3 the blood-pressure rose very slightly,—that is, four millimetres after the inhalation had commenced,—and kept at about this point for half a minute longer, when it commenced to fall, and when the conjunctival reflexes were noted to be abolished the arterial pressure was twenty millimetres below the norm. From this point it fell, with occasional momentary rises, until artificial respiration was resorted to to restore the animal, at which time the pressure was about fifty-five millimetres below the original.

In Experiment 4 the inhalation was followed by a rise at the end of one minute of about twenty millimetres. The blood-pressure continued to increase with occasional fluctuations, so that by the time anæsthesia was complete it was about sixty millimetres above the norm. It then commenced to fall, but when the gas was removed and artificial respiration employed, was still far above zero.

In the second inhalation there was a rise in one and a quarter minutes of about thirty centimetres; the blood-pressure after this steadily increased, so that by the time the conjunctival reflexes were noted to be abolished the pressure was eighty centimetres above the norm. After this it fell, with occasional paroxysms of rising until about a minute before death, when it commenced to fall very rapidly and steadily towards zero.

In Experiment 5 the arterial pressure rose after the inhalation about thirty centimetres, and then very slowly fell.

The extraordinary rise in arterial pressure which took place in some of our experiments during the inhalation of nitrous oxide gas has an important bearing upon practical medicine.

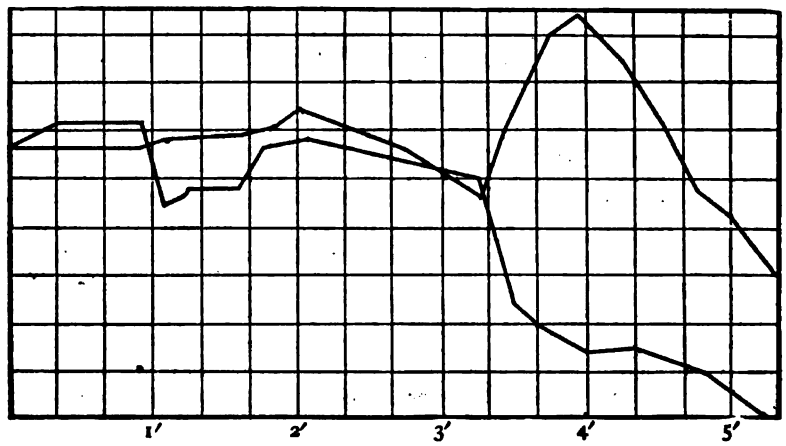
Some time since a death from apoplexy occurred in Philadelphia, directly after the inhalation of nitrous oxide, and it is well known that Dr. Lafont, of France, has asserted that occasionally diabetes mellitus and albuminuria have been produced by the anæsthetic use of nitrous oxide. It is entirely conceivable that in a man with atheromatous or otherwise dis-

eased arteries the inhalation of the gas might cause a rise in the arterial pressure which should produce rupture of smaller or larger vessels, and cause serious symptoms.

In order to portray the effects of nitrous oxide upon the blood-pressure, we have prepared the series of curves which we herewith append, each curve representing the line of average blood-pressure of a single continuous inhalation.

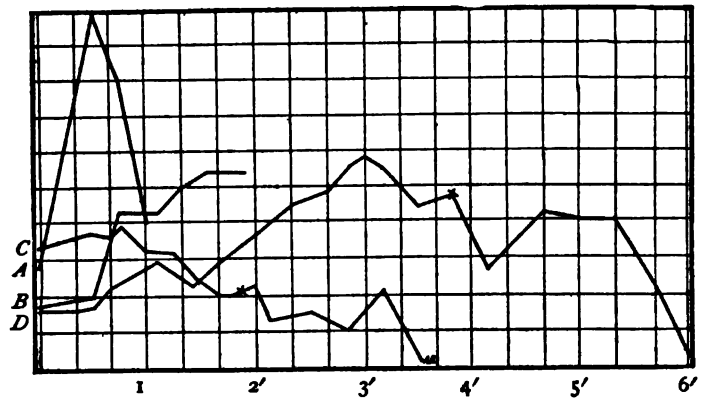
the blood-pressure finally began to fall, and at last reached the zero line; always, however, the pressure was well maintained until long after the complete cessation of respiration, the animal dying through the respiration and not through the heart. Indeed, the maintenance of the circulation after the practical paralysis of the respiratory system is very remarkable. It is also of very great importance in relation with practical medicine. Chloro-

FIG. 2.



EXPERIMENT 2.—Nitrous oxide. Upper line, first inhalation; lower line, second inhalation.

FIG. 3.



NITROUS OXIDE.—Arterial pressure. Experiment 1: *A*, first inhalation; *B*, second inhalation. *C*, Experiment 3. *D*, Experiment 4.

An examination of the diagrams will show, what is revealed even more clearly by our original tracings, that after the inhalation of nitrous oxide gas there is almost always a rise in the arterial pressure, which rise varies very greatly in its extent, as well as in the rapidity of its occurrence. Sometimes it is immediate and excessive; usually, however, it is slowly produced and only moderate in extent. In some cases it occurs a considerable time before the abolition of the conjunctival reflexes, while occasionally its coming on is postponed until after the disappearance of the eye reflexes. In all our experiments, if the inhalation continued,

form directly depresses the heart, and even ether has a similar influence when it is in excess, but nitrous oxide would appear, directly or indirectly, to stimulate the heart and to keep up this stimulation at a time when the respiratory function is almost completely obliterated. A lost respiratory function can be temporarily replaced by artificial respiration, but we have no substitute at all for an arrested heart. It is easy to see why death has so very rarely occurred during anæsthesia from nitrous oxide.

In order to determine whether the rise arterial pressure produced by nitrous oxide

ue to vaso-motor spasm or not, one experiment was made upon an animal (Experiment 6) hose spinal cord had been divided above the rigin of the splanchnic nerves. The result f the inhalation of the nitrous oxide was an mmediate and very pronounced fall in the arterial pressure. This would seem to indicate hat the rise of the arterial pressure usually aused by the gas is due to vaso-motor spasm, ut undoubtedly such spasm is accompanied y a very pronounced increase in the force of he heart's beat. To determine whether the all of the arterial pressure, which occurs late n the inhalation, is due to vaso-motor paralyis or not, a very powerful current was applied o the sciatic nerve of the animal (Experiment 7), whose arterial pressure had fallen, nder the influence of the nitrous oxide, from 38 to 120. After ten seconds of application f the current, the pressure was 109. About alf a minute later the arterial pressure was 10, and when the current had been applied bout twenty seconds the arterial pressure tood at 103. The faradization of the nerve as always accompanied by a violent tetanic pasm of the tributary muscles, showing that t least the motor fibres of the nerve were apable of transmitting impulse. In each intance the pressure fell rather than rose. The ulse-waves were extraordinarily large, and the eart evidently putting forth enormous effort. he pneumogastrics had not been severed, but he irritation of the nerve had no effect upon he pulse-rate, so that there was no reflex inhiition of the heart to interfere with rise of the rterial pressure. The failure of irritation of nerve to cause rise of pressure shows that at his time the vaso-motor system was unable to espond to peripheral stimuli, and warrants the onclusion that the fall of arterial pressure hich occurs in the advanced stage of nitrous ide anæsthesia is due to vaso-motor paralyis.

The experiments which we have made with itrous oxide gas prove that the characteristic ffects of the inhalation upon the circulation re: slowing of the pulse, accompanied by a ronounced increase of energy in the single eart movement, and extraordinary increase of he size and force of the pulse-wave, and followed very late in the poisoning, after the failre of respiration, by excessive rapidity and eebleness of the pulse; primary rise of the rterial pressure of variable extent, followed fter a time, and often after unexplained vicisitudes of pressure, by a progressive fall of ssure to zero. The chief cause of the rise d fall of pressure has been shown to be vasomotor stimulation and vaso-motor paralysis, while the slowing of the pulse is due to stimulation of the inhibitory apparatus.

At this juncture the question naturally offers itself to us for solution, "Are these changes which we have seen due to an indirect or direct action of the nitrous oxide?"

In examining into this subject we first made experiments to determine whether the administration of a small amount of oxygen, along with the nitrous oxide, would prevent the development of anæsthesia. Atmospheric air contains twenty per cent. of oxygen, and we had prepared thirty gallons of a mixture containing one-half this proportion of oxygen,—*i.e.*, ninety per cent of nitrous oxide, ten per cent. of oxygen. This was administered by inhalation to a moderate-sized dog (Experiment 8). The whole of the gas was used up in eight minutes, and neither at the end of this period nor at any time during the inhalation was there the slightest anæsthesia.

Ten per cent. of oxygen is, therefore, capable of suspending the anæsthetic action of nitrous oxide.

The action of the nitrous oxide upon the pulse was, however, not suspended. Before the inhalation the pulse varied from 120 to 130; in twenty seconds after the inhalation it had fallen to 108; in twenty seconds later to 84; some seconds after, it was below 80, when for some reason it rose nearly to the norm, and remained at this position nearly half a minute, when it fell very suddenly to about 50, and remained about this rate until the end of the inhalation.

The arterial pressure before the inhalation varied in its average from 148 to 155; thirty seconds later it was 150; forty seconds later it was 145; thirty seconds later it was 149; thirty seconds later, 140; thirty seconds later, 157; thirty seconds later, 158; thirty seconds after this, 150; and about at this figure it continued until the end of the experiment.

This experiment appears to show that the addition of ten per cent. of oxygen suspe ds the anæsthetic effect of nitrous oxide, as well as its influence in raising the blood-pressure, but not its power of reducing the pulse-rate by inhibiting the heart.

The conclusion that the anæsthetic and vaso-motor influence of nitrous oxide are in some way apart and separate from its action upon the pulse would appear to receive confirmation from the experiments made upon nitrous oxide by itself. The influence of nitrous oxide upon the pulse was very uniform in the different experiments, and consistent

throughout the single experiment, while its influence upon blood-pressure was not only very different in the different experiments, but also varied very curiously and unaccountably in the one experiment, the blood-pressure rising and falling without any obvious rhyme or reason. It would look as though nitrous oxide acts upon the heart and nervous system directly, but has little or no direct inherent influence upon the vaso-motor centres or the brain cortex.

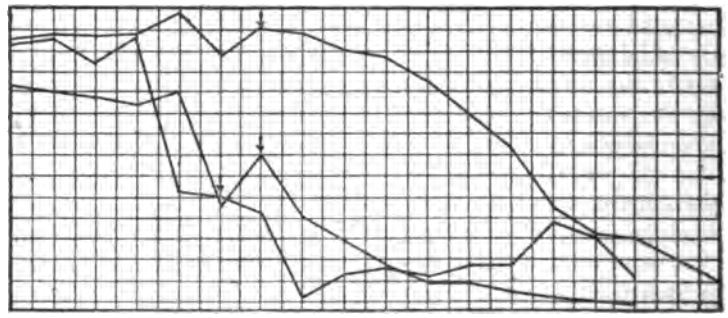
The experiments with nitrogen are three in number. In the first experiment (Experiment 9) unconsciousness was complete one minute and ten seconds after the beginning of the inhalation, but it may have been present before this time. Death occurred three minutes after the beginning of the inhalation of the gas; the arterial pressure was raised in forty seconds twelve millimetres; during the next ten seconds it went up to ten millimetres more, and then fell abruptly eighty to ninety millimetres in the next ten seconds, and continued to fall until death.

In the second experiment (Experiment 10) consciousness was completely lost one minute after the beginning of the inhalation. The arterial pressure slowly rose, reaching its maximum forty seconds after the beginning of the inhalation, when it had gone up fifteen millimetres. After this it fell slowly for a time, and then rose again, one minute and a half after the beginning of the inhalation being a little above the point at which it had started; it then fell, at first slowly, and afterwards more rapidly, until death, which occurred three minutes and ten seconds after the beginning of the inhalation.

In the third experiment (Experiment 11) the pressure at first descended a little, and then rose again, so that forty seconds after the beginning of the inhalation it was three millimetres below its starting-point. After this it fell, at first slowly, and then rapidly, until death, which occurred two minutes and forty seconds after the beginning of the inhalation. In this experiment unconsciousness occurred exactly one minute after the beginning of the inhalation.

In each of the experiments with nitrogen the pulse was at first more or less increased in frequency, and afterwards became slower, usually continuing so until death. The pulse waves were also markedly increased in size being, even when the pressure had almost reached zero, much greater than in the normal animal.

FIG 4.



EXPERIMENTS 9, 10, 11.—Inhalation of Nitrogen.

These experiments show that during the inhalation of nitrogen there is usually a slight rise in the arterial pressure, followed by a fall and accompanied by primary increase of the pulse-rate, which increase varies very much and is followed by a secondary fall.

In contrasting the results which we have obtained with nitrogen and with nitrous oxide our experiments would seem to show that anæsthesia is produced more rapidly when nitrogen is used than when nitrous oxide is inhaled; but, in reviewing the details of our work, we are led to suspect that in some of our experiments with nitrous oxide, owing to a leak in a valve, a little air got mixed with the gas, and thereby delayed the coming on of unconsciousness. Further, as has already been stated, in some of the experiments with nitrous oxide, anæsthesia may have been developed before it was noted. When to these facts are added the circumstance that our experiments with nitrous oxide were much more numerous than those with nitrogen, and that in several cases anæsthesia was produced by nitrous oxide more quickly than in any of our experiments with nitrogen, we do not think that nitrogen can be considered to be a more rapid anæsthetic than nitrous oxide.

The changes in the circulation produced by nitrogen and nitrous oxide differ in quality rather than in kind. In each agency there

a tendency to a rise of pressure, followed by a fall, the rise of pressure being much less with nitrogen than with nitrous oxide. The pulse was, on the whole, similarly affected by the two gases, a strong indication that the action of nitrous oxide upon the pulse is, after all, rather indirect than direct.

Our experiments, therefore, indicate a parity of action between nitrogen and nitrous oxide, and make it very probable that the two agencies act in a similar manner,—that is, by shutting off oxygen.

The blood-changes which are produced by the inhalation of nitrous oxide or nitrogen resemble those caused by mechanical asphyxia, although they are not identical. The rise of pressure is usually much greater in mechanical asphyxia than during the inhalation of either of these gases, but by a number of experiments we have found that even when the trachea is hermetically sealed the amount and duration of the circulatory disturbance varies remarkably, being in some cases very much greater than in others.

It seems to be that *a priori* it might be expected that the changes of the circulation produced by the inhalation of the inert gas should resemble in kind those caused by mechanical arrest of respiration, but should not be identical with them. The mere stoppage of the passage of gas in and out of the lung, and the consequent violent efforts of breathing, must have some influence upon the peripheral nerve filaments in the lungs, which influence would, in turn, react upon the centres of respiration and circulation. Moreover, the gases in the blood differ when the respiration is mechanically arrested from those which follow the inhalation of an inert gas. Under the latter circumstance there is no check of the throwing off of carbonic acid from the blood, although the formation of carbonic acid gas is arrested; in mechanical asphyxia the throwing off of carbonic acid from the blood is put an end to; consequently, while in mechanical asphyxia there is accumulation of carbonic acid in the blood, in the asphyxia caused by an inert gas the carbonic acid in the blood becomes less than normal. Both mechanical and gaseous asphyxia result in the lessening of the oxygen of the blood. In this, and in this only, so far as the gaseous conditions of the blood are concerned, the two processes have a common effect.

The changes in the circulation produced by the inhalation of nitrous oxide or of nitrogen resemble somewhat those caused by mechanical asphyxia. Certainly any differences which may exist are not of sufficient foundation for any argument that nitrous oxide and nitrogen act as direct anæsthetics, or, in other words, as substances which deprive animals of consciousness by virtue of properties inherent in themselves. The similarity in the action of the two gases, both as to the general symptoms which they cause and as to the circulatory changes which they produce, is striking, and indicates distinctly that they have a common action. The action of nitrogen is certainly simply that of an inert substance which shuts out oxygen, and the whole mass of evidence is concordant in showing that the anæsthesia produced by the inhalation of nitrous oxide is due to the shutting off of the supply of oxygen from the nerve-centre.

Our research upon nitrous oxide might well have ended at this point, but the results reached have suggested the propriety of determining the effects of an excess of oxygen and carbonic acid upon the blood-pressure. (See Part II.)

(To be continued.)

THE VALUES, RELATIONS, AND DANGERS OF ANÆSTHETICS.

By G. Archie Stockwell, M.D., F.Z.S., Detroit, Michigan.*

THE question of a choice of anæsthetics for general purposes, or for the more common surgical operations, is still, in many quarters, a moot one. Chloroform, ether, methylene chloride, ethyl bromide, nitrous oxide, and the so-called "triple" or "A.-C.-E. mixture" (alcohol 1 part, chloroform 2 parts, ether 3 parts) have each their adherents among medical men of the highest professional standing.

In the medical press, also, periodically appear essays and discussions having for their aim the establishment of the superiority of one or another of these agents, but as these for the most part are partisan in character, they contribute little towards the sum total of knowledge.

The fact is, that too much care cannot be exercised in the selection of an anæsthetic, not alone in consideration of the relations of the agent, but also as regards its strength and purity. Much of the opprobrium that has in certain instances attached to ether, chloroform, ethyl, and methylene, it must be acknowledged, was primarily due to employment of weak, crude, and impure products.

* Member of the New Sydenham Society, Lond.

On the contrary, the uniform success attained, with freedom from accident, by the use of chloroform by the surgeons of the Scottish school, must be attributed not alone to the fact that fewer people submit to anæsthesia in Scotland, but also to the care in the selection of the drug, and the invariable rule of testing its quality before employing.*

It may further be said that neither clinical experience nor experimental research has yet been able to demonstrate positively the exact condition to which any one anæsthetic is applicable, or even under which it can be most advantageously employed. Each individual case requires special study, and the final selection must be based upon the physiological phenomena peculiar to the disease, the same as induced by the anæsthetic, and upon individual idiosyncrasies. Finally, when the selection is made, the agent should be employed with the utmost care and caution, for it should be remembered that the very physiological phenomena that permit anæsthesia, and that are thereby produced, must always be a source of danger,—a danger that may be greatly enhanced by obscure morbid conditions.

CHLOROFORM.

Of all the anæsthetics, chloroform or *terchloride of formyl* (CH,Cl_3) is one of the most rapid in the production of anæsthesia, and at the same time one of the least obnoxious as regards inhalation; the effect produced is most permanent, the drug itself most convenient as regards bulk and handling, and recovery from the influence, in general, is more speedy than from most anæsthetic agents. These are desirable and most important considerations, but, unfortunately, are in no small degree overbalanced by certain specific disadvantages.

Chloroform has, first, a stimulating, and second, a sedative, action upon the brain. It derives its anæsthetic properties from its paralyzing influence upon the ganglionic centres of the sensory nerves, while the reflex functions of the cord are also held in abeyance, facts which should constantly be borne in mind.

The denial, by those who uphold the superiority and efficiency of this anæsthetic (or who seek to restore it to its early status and popularity), that shock and cardiac arrest are results made possible by its administration is, perhaps, but natural; and many efforts have been made to substantiate this, the most notable and recent being the Commission of the British Medical Association and the "Hyderabad Chloroform" Commissions, known respectively as the first and second.

The former, composed of such notables as Anstie, Richardson, Ringer, Gosselin, and Vulpian, in spite of an admitted bias, arrived at conclusions directly opposed to those formulated by the two Hyderabad Commissions. Of the latter, the first was composed of Dr. Helier, Messrs. Kelly and Chamarette, and Surgeon-Major Lawrie; the second, of Surgeon-Major Lawrie, Rustomje Hakim, Drs. C. Bomford and T. Lauder Brunton, who associated with themselves also the members of the former Commission.

The first Hyderabad Commission reached practically the same conclusions that are now formulated by its successor; but they received little attention, since (1) they controverted what were held to be established physiological facts, and (2) the individuals composing the Commission were practically unknown outside of their own immediate professional and social circles, and possessed no reputation as either original observers or as teachers. It was for these reasons that the second Commission was organized, Dr. T. Lauder Brunton being added as a representative of the *Lancet*, of London, and a "make weight."

The history of these two Commissions is interesting also, and, aside from the distinctive "chloroform" title, evidence that they were assembled for *ex parte* purposes, and also that the conclusions arrived at were foregone, even before work was begun. The *Lancet*† admits that both owed their origin to Surgeon-Major Lawrie, who was animated not with a thirst for precise knowledge, but with a desire to vindicate his late teacher,—Professor Syme,—

* Deaths do occur from chloroform in Scotland, notwithstanding a contrary belief has been assiduously promulgated. Such cases are not, however, often brought to light, since coroner's inquests are unknown, and there is not the opportunity for newspaper publicity that occurs in England and America. A casual search of medical journals reveals the following chloroform casualties: Edinburgh Royal Infirmary (1878 to 1880), 3 deaths; Western Infirmary, Glasgow (1883 to 1886), 3 deaths; Royal Infirmary, Glasgow (1883 to 1885), 2 deaths; other parts of Scotland (1881 to 1883), 6 deaths. England, 110 deaths to 14 in Scotland during the same period. Population of England in 1880, 28,247,151; Scotland, 3,991,490. Ratio of deaths in England, 1 to 256,792; in Scotland, 1 to approximately 285,107; *vide* Dr. Alex. Wilson.

† January 18, 1890.

…o was wont to assert his belief that this …nt might be "administered as an anæs…tic with perfect safety, provided the ad…istrator watched the respiration with due …e." To give still further *éclat*, the Nizam …Hyderabad was induced to associate his …e and contribute liberally to its sup…rt, besides giving it the sanction of his …ernment.

…he report of this second "Chloroform" …mission, as given by the *Lancet*, con…s the intelligence that four hundred and …ty experiments were performed, three hun…d and sixty of which were on the pariah …s of India—creatures whose physiologi… relations are not at all well understood, …d whose lives, far from approaching those …domestic canines, are more nearly allied …the feral *Canidæ*—and seventy on monkeys, …e latter chosen under the mistaken sup…ition that like physical conformation be…s like physiological characteristics. The …eriments, as announced, were undertaken …demonstrate—

"The effect upon blood-pressure, heart, …d respiration, of the inhalation of chloro…m, ether, and the 'A.-C.-E. mixture' (al…ol, chloroform, and ether), administered …various ways and under varying condi…ns."

…he fact, however, that one hundred and …e pints of the first-named fluid were ex…ded against but eleven of ether, which …t must also have furnished no inconsider…e portion of the triple compound named, …o most minds corroborative evidence that …e experiments were undertaken, primarily …d solely, for the purpose of vindicating …preceding Commission,—all of whom were …ociated with this Committee,—*et al.* In…ed, this is practically admitted in a second …tement of the objects of the Commission, …ich are given,—

"1. To test the suitability and safety of …oroform as an anæsthetic.

"2. The effect of pushing the above…med anæsthetic (*a*) to a dangerous de…ee, and *more especially till respiration ceases;* * …until death results.

"3. The modifications in the effects of …ese anæsthetics which result from (*a*) …phyxia in varying degrees, and produced …various means; (*b*) from the use of drugs …ch as morphine, atropine, physostigmine, …d others.

"4. The reality or otherwise of the alleged liability during ordinary chloroform administration to the occurrence of primary or secondary syncope or stoppage of the heart, brought about either by shock or through fatty or weak heart, or hemorrhage, or by change in the position of the body. . . .

"5. The effect of the anæsthetics above mentioned upon different animals, more especially monkeys, as the nearest approach to human beings." †

The conclusions deduced, briefly summarized, are as follows, the paragraph numbers referring to the report embodied in the *Lancet* (January 18):

"Chloroform, when given continuously by any means which insures its free dilution with air, causes a gradual fall of the mean blood-pressure, providing the animal's respiration is not impeded in any way. . . . If the chloroform is less diluted the fall is more rapid, but is always gradual, so long as the other conditions are maintained; and however concentrated the chloroform may be, it never causes sudden death from stoppage of the heart" (Paragraph No. 1). . . . "The theory which has hitherto been accepted is that danger in chloroform administration consists in the stoppage or slowing of the heart by vagus inhibition. This is now shown to be absolutely incorrect" (Paragraph No. 18). . . . "Granting, then, the truth of Ringer's conclusions from the experiments upon the frog's heart (*which have not been repeated and confirmed by the Commission*),‡ that chloroform has a gradual paralyzing effect upon the heart-tissue, we must conclude that such an effect, in the degree in which alone it could occur in the practical inhalation of chloroform, would rather be a source of safety than of danger" (Paragraph No. 19). . . . "In . . . the case of a dog that had had morphine, remarkable slowing and even temporary cessation of the heart's action occurred again and again at the same moment respiration stopped, but the heart invariably recovered itself. . . . The failure of the heart, if such it can be called, instead of being a danger to the animal, proved to be a positive safeguard, by preventing the absorption of the residual chloroform and its distribution through the system" (Paragraph No. 22).

* The italics are mine.—AUTHOR.

† This premise, founded on the supposition that like physical conformation begets like physiological conditions and attributes, is possessed of neither reason nor fact. No comparative physiologist would have fallen into this error.

‡ Italics mine.—AUTHOR.

"Morphine appeared . . . to render the rise of blood-pressure that occurred when chloroform was discontinued slower and less complete, and to bring about a more or less permanent condition of anæsthesia" (Paragraph No. 31). . . . "The other drugs had no effect upon the action of chloroform, except when their own special action became the leading feature in the case" (Paragraph No. 32). "There is nothing to show that atropine does any good, . . . and it may do a great deal of harm" ("Practical Conclusions," No. XIII.).

"Chloroform has no power of increasing the tendency to either shock or syncope during operations. If shock or syncope from any cause does occur, it prevents, rather than aggravates, the dangers of chloroform inhalation" (Paragraph No. 37).

"The experiments on dogs that had been dosed with phosphorus for a few days previously, show that the fatty, and consequently feeble, condition of the heart and other organs so produced have no effect in modifying the action of chloroform. . . . Numerous attempts were made in these animals to produce shock by operations in recumbent and vertical positions, but without any more result than in those that were healthy" (Paragraph No. 38). "The truth about fatty heart appears to be that chloroform, *per se*, in no way endangers such a heart; but, on the contrary, by lowering blood-pressure, lessens the work the heart has to perform, which is a positive advantage. But the mere inhalation of chloroform is only a part of the process of administration in practice. A patient with an extremely fatty heart may die in mounting the steps in front of his own hall-door, or from fright at the mere idea of having chloroform or of undergoing an operation, or during his involuntary struggles. Such patients must inevitably die occasionally during chloroform administration, and would do so even were attar of roses, or any other harmless vapor, substituted for chloroform" (Paragraph No. 39).

"As regards the effect of chloroform upon different animals, it may be said to be the same as far as its anæsthetic action is concerned" (Paragraph No. 42). . . . "The cases . . . are quite sufficient to show that animals are just as liable to death from careless administration of chloroform as human beings; and the accidental deaths which occurred during the experiments of the Commission *afford the best possible proof that the effects of chloroform are identical in the lower animals and in the human subject.** The statem frequently made that dogs are more re to chloroform than human beings is e incorrect" (third paragraph under capt "Accidental Deaths").

"The experiments with ether show t is impossible to produce anæsthesia wit agent unless some form of inhaler is which thoroughly excludes the air" (graph No. 45). "If surgeons choose content with a condition of semi-anæst it can, no doubt, be produced with p safety, though with discomfort to th tient, by ether held rather closely t mouth. Such a condition of anæs would never be accepted by any su accustomed to operate under chlor If more perfect anæsthesia is requir can be procured by excluding the air rigidly, but then *there is exactly the danger as in giving chloroform*" (Para No. 46).

Careful perusal of the foregoing, embody the most salient points, will, impartial critics, be sufficient to i their value; they are, in fact, sel demnatory. Further, the evidence sented, in spite of the manifest bi favor of chloroform and the eager de condemn ether, is very far from bei the effect that it is other than easy t duce a fatal result through the admi tion of the former anæsthetic, but that proper precautions, lethal accidents m many cases be averted. This certainly from being new or startling informati anæsthetists.

The assertion, however, that is impl not made (Paragraph No. 46), that c form is superior, or, at least, equally with ether, is erroneous, and founded ignorance—duly manifested on the pa the Commission—of the latter drug a the mode of its administration; it w news to most surgeons that they ge procure only a semi-anæsthesia. All i this is a most misleading and unfort paragraph, and has led certain frien chloroform to boldly give utterance to nicious and unwarranted statements, su "It has now been demonstrated that anæsthetic may be given in any cas quiring operation with perfect safety ease." And even the *Lancet* commits editorially in the following:† "The

* Italics mine.—AUTHOR.

† January 18, 1890.

al outcome of the research would ap-
r to be that deaths from chloroform are
t inevitable; they are therefore preventible,
d by due care in the administration they
y be with certainty avoided."

Evidently the editor at the time failed to preciate the full force of his utterance, ce, taken as it reads, it is implied that a ath under chloroform anæsthesia, under y and all circumstances, is avoidable, and nce would demand the criminal indictment the surgeon and his anæsthetist. In a later issue,* however, in reply to numerous iticisms, the *Lancet* modifies its position y stating it was intended to express "the nclusions of the Commission rather than r own."

According to Dr. Laurence Turnbull,† arly four hundred deaths are definitely re-rded as due to chloroform anæsthesia. If e unreported cases are likewise estimated, may easily be surmised that the total mounts to at least five hundred, a figure ore than treble that assigned to ether, many the fatalities of which, moreover, are of ubtful character. These cases all, from e stand-point of the Hyderabad Commis-ons, also impugn the skill, competence, and are of some of the most distinguished thorities, including Sir James Y. Simpson, richsen, Professors Billroth and Volkmann, ir Geo. B. B. McLeod, J. Farrant Fry, rancis W. Clark, Professor Syme, Hunter cGuire, W. A. Hammond, James Wood, illard Parker, F. H. Hamilton, Alden arch, Moses Gunn, W. W. Dawson, and ther eminent surgeons, past and present, ho are to be condemned as bunglers, in-competents, or—worse!

There may be several objections taken to he unreserved application of the experiments of the Commission, especially to man.

That chloroform as a general anæsthetic is not as safe as ether, we have the evidence, based upon clinical experience, of scores of competent witnesses, not alone in the United States, but in Great Britain, Ireland, and upon the continent of Europe. So recently as February 10, at the Medical Society of London, Mr. Bailey and Mr. Woodhouse Braine, two of the ablest and best known of British anæsthetists, gave unequivocal testimony in favor of ether, and claimed, most justly, that this anæsthetic "has obtained the preference by the great majority of surgeons." Mr. Teale, also, at the last session of the British Medical Association,‡ made practically the same remark, and added that, since substituting ether for chloroform, he had "no anxiety whatever; the patients get well; the operations are simplified; and there is in every instance perfect anæsthesia." Juillard, of the Geneva clinic, and Dumont, corroborate Mr. Teale.

It has been generally taught that the fatal results of chloroform were due to cardiac arrest. This the Commission denies, claiming instead paralysis of respiration, basing its conclusion on the experiments conducted on dogs. It must be remembered, however, in spite of the dictum pronounced that "results" are identical in man and lower animals, that such is without force, coming as it does from individuals possessed of but meagre knowledge of comparative physiology; moreover, the statement is untrue in more than one particular. Dogs are not human beings, and repeated research and experiment has proven that exact parallels are impossible. To morphine, the Commission says, pariah dogs are "very indifferent." Such is not true of domestic canines, which are peculiarly sensitive to opium and its derivatives, a very minute dose, comparatively, oftentimes proving lethal (Youatt, Mayhew, Blaine), as has been repeatedly proven to the writer through personal experience. Even domestic canines of the same precise breed vary materially, according to latitude, altitude, climate, and concomitant surroundings, much more so than human beings; and the dogs of Europe have the vascular system more fully developed than those of America, whereby operations upon the former are attended by much more profuse hemorrhage. Professors Wood and Hare justly remark: "We have given elaterium to dogs until it has caused death, but it has not purged. Suppose that every dog in India had had administered to it elaterium without the production of purgation, would that prove that elaterium does not purge man?" §

Regarding the absence of shock and inability to produce the phenomena thereof in the animals experimented upon, and upon which no inconsiderable stress is laid, it is well known to comparative physiologists that while shock may obtain in man and in some higher (especially *domestic*) animals, as the result of the administration of chloroform,

* March 29, 1890.

† "Artificial Anæsthesia," 1889.

‡ Leeds, August 13–16, 1889.

§ *Medical News*, February 22, 1800.

such is practically non-existent in the majority of feral creatures, notably the *Simiadæ* and *Canidæ*.

Again, for all three hundred and sixty pariah dogs* in India have died through respiratory failure, as the result of the administration of chloroform, it must be remembered that a far greater number of the domestic form, in England, France, Germany, and America, under precisely parallel lines of experiment, have succumbed to cardiac syncope. We may believe, however, that in many instances animals to whom lethal doses of chloroform vapor are administered do succumb to pulmonary paralysis, but it is denied by all clinical observers that such is an invariable, or even common, sequel, so far as the human family is concerned. The majority of deaths in the latter are inconsistent with such view; the fatal result is usually sudden. The patient, in the midst of violent struggles, after a deep inspiration becomes at once practically lifeless, the pulse ceasing, or sometimes becoming distinctly and gradually feebler, before cessation of respiration. Further, in chloroform accidents in man of the sudden variety, considered to be due to cardiac syncope, certain conditions are present which are extremely difficult to obtain in animals. It is, I believe, generally conceded that chloroform fatalities may be induced in the latter through either pulmonary or cardiac arrest, or both, according to the method in which the drug is administered.

Dr. Snow long since reconciled these differences between the results of experiment and of clinical practice by showing that fatalities might happen in one of two ways, according to the amount absorbed: "(1) Chloroform gradually inhaled until death resulted, killed by gradual paralysis of respiration, the heart continuing to beat after cessation of respiration; (2) but when a large dose of the drug was suddenly taken into the system, the heart ceased beating before the respiration stopped; (3) it was also thought that this sudden paralysis might set in before insensibility was produced. The cardiac paralysis was considered to be the chief factor in the fatal result, because efficient artificial respiration did not resuscitate these cases. There was an impression that the cessation of the respiration might be entirely remedied by artificial respiration, but that the affection of the heart was necessarily fatal."

These views of the action of chloroform were confirmed by the Commission of the Medico-Chirurgical Society, London, 18[illegible] and also by a Committee of the British Medical Association in 1879, which, in its report states: "Chloroform has sometimes an unexpected and apparently capricious effect on the heart's action. It may cause death in dogs by paralyzing either the heart or the respiration. The variations in this respect seem to depend to some extent on individual peculiarities of the animals. In most cases respiration stops before the heart's action, but there was one instance in which respiration continued when the heart had stopped, and only failed a considerable number of seconds after the heart had resumed."†

Surgeon-Major Lawrie displayed a decided animus against watching the pulse, in the report of the first Hyderabad Commission, this is also apparent in the report of the second. The statement is made by him also that "since the year 1856, in Great Britain, there is no death from chloroform recorded in which it was proved that the respiration, and the respiration alone, was attended to throughout the inhalation."

This is certainly untrue! Dr. Alexander Wilson, anæsthetist to the Royal Infirmary of Manchester, declares:‡ "There are several fatal cases where the respiration only was attended to, and there are many more in which respiration was attended to as fully as possible." A notable case of this kind will be found in the *British Medical Journal* for 1884, vol. ii. p. 811.

Since the report of the Commission, a series of parallel experiments was undertaken by Professors H. C. Wood and Hobart A. Hare of the University of Pennsylvania, that have an important bearing upon this subject, they say,—§

"As we use between us, in the laboratory of the University, many dogs yearly, a very large proportion of which are finally killed by chloroform, we may be excused for our positive assertion that chloroform *is* a cardiac paralyzant, and does oftentimes kill dogs by direct action upon the heart or its contained ganglia, especially since we have been strengthened in our opinion by the fact that Dr. Reichert, Professor of Physiology in the University, has reached results confirming our own, and has frequently demonstrated the same to the University classes."

* The pariah dog is practically a *feral* creature.

† *British Medical Journal*, 1879, vol. i. pp. 1 and 9.

‡ *Medical Chronicle*, vol. xii. p. 9.

§ *Medical News*, February 22, 1890.

as been the custom of one of the authors,* his lectures before the University classes, demonstrate, by means of the respiratory bour, the mercurial manometer, and the ography, a cardiac arrest through chloform. Further than this, we have at various es taken tracings proving the same facts.

"The statements that have been recently de in the Indian journals and in the *cet* (London) have led us to re-examine subject, and to make a series of experints upon it with great care. We have also ried and extended these experiments in der to determine whether chloroform parzes the heart by direct influence, or by an direct action through the vagus. . . . In all es accurate tracings have been made by ans of the kymographion and the respiraty tambour.

"The experiments . . . show that chloroorm acts as a powerful depressant poison on both respiration and circulation; that metimes the influence is most felt at the art, and death results from cardiac arrest; at in other cases the drug paralyzes pririly the respiratory centres, while in other tances it seems to act with equal force on both medulla and heart. So far as actical medicine is concerned, it makes litdifference whether the heart stops just beor just after the respiration, so that those es in which cardiac and respiratory arrest almost simultaneous, are, for the purposes the clinician, the same as those in which the art-arrest precedes respiratory paralysis. nally, the results of our new experiments o coincide with our previous experience in laboratory, and with what we believe to the general belief of physiologists, that rdiac arrest is specially prone to occur hen chloroform is administered rapidly and concentrated form."

There are also several reasons why objecons must be taken to the unreserved applition of the conclusions of the experiments of e Commission to man. Dr. Alexander Wilson oints out that there are differences existing the action of chloroform on the heart of man nd animals. Among others are the relations f the vital capacity to size, and the interferace with complete filling of its lungs, resultng from restraint and holding of the animal.

It has often been shown that suddenly tal cases are rare in human subjects in which there is any impediment to the free expansion of the chest. Dr. Clover long ago pointed out that phthisical patients are less likely to take a fatal dose of chloroform than those with healthy lungs, because their chloroform-absorbing capacity is diminished. Again, it has been noted that but few die when chloroform is inhaled by patients lying on the side; also few, if any, sudden deaths attributable to the use of this anæsthetic are reported in cases of ovarian tumors. The explanation is, that the interference with full expansion of the lungs by the position or presence of the tumor prevents the lungs taking in the unnecessary fatal dose. On the other hand, the greater number of suddenly fatal cases occur in people with healthy chests and large vital capacity. The anæsthetic is administered to the patient in a natural position that affords the respiratory muscles full play, whereby the chest is completely filled.

It is, therefore, worth considering if the holding of a struggling animal, such as a dog, is not especially apt to so interfere with its breathing as to prevent a full dose being taken, particularly as the animal would not likely be held in its natural position. There is decided evidence afforded by the report of the Hyderabad Commission that in several instances the holding of the animal did actually interfere with respiration. If such was the case in one, it was probably the same in many, especially as the dog's thorax is so shaped that to hold the forelegs together in front would prevent complete expansion of its chest, and thus prevent suddenly taking a fair or even average dose of chloroform vapor. Again, in animals we have the absence of desire to inhale freely; and in at least one fatal case reported in man the desire to inhale chloroform freely contributed chiefly to the fatal result.

Among human beings the subject is usually young or middle-aged, with an expansile chest. Chloroform is willingly and quietly inspired until semi-unconsciousness supervenes, when the fauces and glottis are also insensitive; then, during a struggle, with or without holding the breath (the patient often in an upright position and with arms fixed by assistants, which gives the respiratory muscles good purchase), one or two deep inspirations are secured at the greatest advantage, thereby obtaining the maximum amount of chloroform, and the subject becomes instantly pulseless. Here is manifested the desire to speedily obtain the full influence of the drug, the voluntary inhalation followed by the still, steady, conscious anxiety to inhale more; and then the involuntary deep

* Dr. H. C. Wood.

inspiration, in the natural position in which such inspiration can best be taken.

But it will be observed these are all conditions extremely difficult and often impossible to secure in experiments on animals, and it is only under such precise conditions that cardiac paralysis has been induced in man. The interval between the cessation of the heart and of respiration is so short that these points, trivial though they seem, may easily be of importance in modifying the result.

Aside from the foregoing objections to the work of the Commission there are other apparently serious flaws:

First.—It has always been asserted by the advocates of the cardiac-syncope theory of chloroform fatalities that it is only under certain circumstances, and by a certain definite combination of factors, that the drug can be introduced into the circulation in quantities sufficient to paralyze the heart, and that this particular combination occurs very rarely,—only about once in two or three thousand administrations. Because the Commission did not obtain this combination in less than five hundred attempts (really in *only four* instances were the surroundings and attendance made favorable thereto), they conclude such cannot exist.

Second.—Under such circumstances it will require something more than mere assertion, backed by phosphorous experiments upon dogs (in whom danger from shock is practically non-existent), to convince the medical world that the inhalation of chloroform by a patient possessed of fatty heart is as innocuous as a whiff of "attar of roses."

Third.—In spite of the fact that so well-known a gentleman as Dr. Lauder Brunton has been enlisted in the affirmative, it must be remembered that the able editor of the *Practitioner* is a *physician* and not a surgeon, the distinction being very sharply drawn in practice as well as by title in Great Britain. The practical clinical experience of the physician with anæsthetics is as nothing when compared with that of the surgeon; and though Dr. Lawrie is of the latter class and rank, it must not be forgotten that he was, and is, the exact antithesis of an unbiased observer, having long asserted, in the most positive and aggressive manner, opinions in exact accordance with the findings of the Commission of which he was a member. Further, that the former is not infallible, may be quoted his assertion* that small doses of chloroform are more apt to produce death than large, because "the reflex contraction of the ves is destroyed, while the heart is stopped slowed, so that the irritation of a senso nerve may produce syncope by stopping t supply of the blood from the heart, while blood still flows rapidly from the arterial s tem through the capillaries into the veins If this were true, it would inculcate mo cases of heart-failure under ether than chlor form, since the former is more irritating the upper air-passages than the latter.

Fourth.—The climate of India is such th it is impossible to obtain or preserve pu ether, so that an impure product was obtain for the experiments carried out by means this anæsthetic.

Fifth.—The investigations consisted sole of laboratory work, as to the value of whi a large number of medical men, surgeons, a practical physiologists especially must ente tain serious doubts.

Sixth.—It must be admitted, also, th when laboratory experiments clash wi clinical observations, the latter must ha precedence; the former only lead the way clinical studies, whereby the final verdi must be determined.

Finally.—The truth regarding chlorofor appears to be that, while its administrati in dilute doses tends to heart paralysis man, in more concentrated form it may i duce both cardiac and pulmonary arrest These facts alone evidence the superiority ether as an anæsthetic, in which the sole da ger, so far as lethal exit is concerned, is fro paralysis of respiration. Most of us ha seen, or are familiar with, unavoidable, ser ous, and even fatal accidents from chlor form, yet very few have ever witnessed an untoward results from ether, if carefull and understandingly administered. Agai it must be remembered that chloroform re quires a carefully graduated admixture atmospheric air,—not to exceed three pe cent., since five per cent. is admitted t be invariably attended by fatal consequence This is a very serious drawback oftentime since it is almost impossible to secure exa or even approximate proportions.

(To be continued.)

* "Materia Medica and Therapeutics."

† "Aside from fatty and brown atrophy, particular at tention must be directed to degeneration of the hea muscle occurring in consequence of long-continue chloroform anæsthesia. Death occurs after prolonge anæsthesia, increasing collapse, especially when th body is weakened in other ways, as by hemorrhag during operation. This degeneration does not oc after ether.—VON HERFF.

UDIES IN THERAPEUTICS.—CANNABIS INDICA.

By John Aulde, M.D., Philadelphia, Pa.,

ber of the American Medical Association, of the Medical Society of the State of Pennsylvania, etc.

HARMACOLOGY.—The fact that no cases of acute poisoning have been reted from the use of this drug may be acnted for by reason of the limited amount ch is required to produce an effect upon economy, together with the knowledge for generations it has been used with a to produce a peculiar form of intoxiion. Medical literature furnishes quite array of interesting cases in which it has n used experimentally for the purpose determining if the reports handed down m Oriental writers regarding its merits the production of euthanasia are warted, and the general conclusion is that se narratives are highly colored, and rcely to be accepted as representing the e position of the drug.

The antagonists are about the same as those use for morphine-poisoning; the stomach uld first be emptied by an emetic, when ill be in order to administer hot coffee, ychnine, and ammonia for its stimulating ct, along with other alkalies or acids. ctricity may be used, and atropine hypomically will be found valuable, and, in e of great prostration, artificial respiration uld be adopted, the patient in the mean e being kept awake and in motion until effect of the drug begins to disappear. e dangers from poisoning are more likely occur with preparations of cannabis on count of the inferiority, and it is, therere, of paramount importance that only *ayed products* should be employed. The nergists which may be used will include all ose remedies which depress the nervous stem, such as anodynes like opium, bellanna, hyoscyamus, and the use of alcohol, th inhalations of ether and nitrous oxide. he bromides, with chloral, gelsemium, and rgot, all increase the sedative effects of canbis. Absorption is sometimes quite rapid, though many preparations are inert, and a asonable degree of caution must be exercised hen any new preparation is ordered, and it ould also be stated that when used hypoermically the power of this drug is greatly ened, and, besides, allowance must be made r idiosyncrasy on the part of the patient. The mode of elimination is unknown.

A study of the general action of this drug is extremely interesting. Cannabis has long been known as one of the active ingredients of chlorodyne, a proprietary preparation, which is known to produce anodyne and hypnotic effects, and it has been variously classed as an exhilarant, a soporific and anodyne, a spinal stimulant as well as an indirect antispasmodic, and, what is even more strange, it seems to possess in a degree all of these different properties. The anæsthetic properties were known to the Chinese as early as the third century, and it is said the Scythians were accustomed to expose themselves, as in a bath, to the vapor of the seeds thrown upon hot coals. As a neurotic, it is similar to opium and alcohol, the stage of excitement being peculiarly well marked, and longer than that of opium. *Small doses*, as a rule, give rise to mental and motor activity, which is none the less delirium, although the effect varies with the individual; muscular activity is always a marked feature. The effect upon the brain is generally prompt, and is characterized by more or less delirium and hallucinations, which is followed by deep sleep. The impression obtains that these hallucinations are always agreeable, but, indeed, the fact is they are often more painful than otherwise the patient frequently being oppressed with a dread of some impending calamity. As a pain-relieving agent, cannabis is more especially indicated in functional derangements with local manifestations, as in *tic douloureux*, dysmenorrhœa with anæmia, due to obstruction, such as is not uncommonly met with in young girls, whose mothers call on the physician because they act so "silly." Its great value is shown in the power it possesses to overcome irritable conditions like delirium tremens, the cough of phthisis, as well as the flatulency of the climacteric.

The use of bhang (hashish) by the Orientals has evidently caused a mysterious halo to be associated with this drug in the minds of the ignorant and superstitious, but, knowing the effects of the remedy upon the nervous system, we are in a measure prepared to hear the most fabulous reports concerning its influence. A remarkable feature is that it affects the system differently according to the method by which absorption takes place, whether by inhalation, by the stomach, or when administered hypodermically. At times wonderful feats are accomplished in imagination, such as sailing through the air, walking on the ceiling, and apparently there is

an absolute loss of the sense of space and time. It is said that hashish was used by the Oriental chieftain to incite his followers to warlike deeds, and under the influence thus produced they became desperate when encountering an enemy, hence arises the name assassins (*haschaschins*). The disorders of vision and dilatation of the pupil may have something to do with the weird imagery that takes possession of the subject. Cannabis produces visions in some persons which may be pleasant or laughable, while they may be exceedingly disagreeable to others, and we cannot wholly credit the drug with its reputed fabulous properties, although in warm climates the effects are said to be most astonishing and seldom witnessed in temperate latitudes. If not accepted too literally, the following panegyric by Glendenning will serve to arouse the student's attention: "It acts as a soporific or hypnotic in causing sleep; as an anodyne in lulling irritation; as an antispasmodic in checking cough and cramp; as a nervine stimulant in removing languor and anxiety; also in raising the pulse and enlivening the spirits, without any drawback or deduction of indirect or incidental inconvenience; conciliating tranquil repose without causing nausea, constipation, or other signs of effect or indigestion, without headache and stupor."

Chronic poisoning is attended with œdema of the face, weakness and tremor, mental feebleness, and, finally, marasmus. Clouston, Phillips, Wood, and others have experimented with hemp by taking it personally, and their testimony corroborates substantially what has been said of its effects upon the system.

The special action of hemp upon the nervous system is worthy of mention. Both it and gelsemium are supposed to act upon the cerebral centres, and thus the sensation of pain is not perceived; but of course this action is in a more limited degree than that of opium, but both appear to have a decided sedative action upon the fifth nerve. Brunton suggests that the effect of hemp is due to the combined stimulant action on the nerve-centres of the brain and spinal cord, thus producing a paralyzing effect upon the peripheral ends of the motor nerves, like belladonna, hyoscyamus, etc., by which the sensibility is obtunded. Its influence upon the brain is shown by sleeplessness, its power to induce quiet in the attacks of delirium tremens, and more especially in mania, and, further, by the fact that for a considerable period —twenty-four hours — the effects of the drug do not disappear, as manifested by vertigo and headache. The tactile sense is greatly lessened, and thus it became at one time a remedy for the production of anæsthesia.

By some observers hemp is credited with the power to produce by its intoxicating influence a condition of affairs that exhibits the true character of the patient, but probably it would be more nearly correct to assume that the drug has temporarily suspended control over hereditary tendencies, and upon this basis we are able to account for the furious attacks of rage as well as the spontaneous outbursts of joy. These manifestations simply show that the subject has been curbed by his environment. The same mental and moral traits are supposed by many to follow the use of alcoholic preparations, but in all instances due allowance must be made for the impressions which are most distinct and dear to the mind previous to the ingestion of the drug, as undoubtedly they will be the most likely to come to the surface, just as dreams attend upon mental activity or a disordered stomach. The antispasmodic properties of hemp are well illustrated in its power to overcome spasm and pain, as seen in asthma, in hepatic, renal, and uterine colic.

The circulation is not materially excited; it is modified differently, depending on the time that has elapsed from taking the drug, but even this is somewhat irregular; a general sensation of warmth is experienced, except in the feet.

The respiration is variously affected, and may be increased or diminished. The temperature rises when the action of the drug manifests itself by way of muscular movements, but is lowered when sleep supervenes.

There is a marked improvement in the appetite of those who are under the influence of hemp for the first time, although the secretions of the alimentary tract are not materially affected; dryness of the tongue and constipation do not ordinarily follow its use, a fact which points to its exhibition in the treatment of those who have been addicted to the opium habit. Large doses cause derangements of the digestion, whether it be taken for the first time or after continuous administration, but not to the extent of opium, and the absence of after-effects seem to confirm what has just been stated. When a considerable dose has been taken for the

time, vomiting may be expected to occur re the approach of the hypnotic period s the dose has been unduly large.

he influence of cannabis upon the genito- ary system has long been recognized, it is said that impotence is not uncom- among hashish-eaters, which may be unted for on the basis of repeated and frequent overstimulation of the sexual ns. The aphrodisiac properties, how- , are disputed, and doubts are enter- ed as to its value in augmenting the al function, except through suggestion onnection with the effect produced upon nervous system. Hemp has the power to ease the energy of uterine contractions, gh no claim is put forward that such tractions are initiated *de novo*, and it is probably that we find an explanation of alue in the treatment of certain cases of menorrhœa, by recalling the fact that hmical contractions of the organ are stant after the age of puberty, with or out pregnancy.

he urinary flow is somewhat increased, this may have no more significance than milar result which follows the use of qui- e, which is generally noticeable when the on taking it lies down an hour or two rwards.

Therapy.—From the preceding remarks on the pharmacology of cannabis indica reader will be able to formulate some eral ideas for its employment in the treat- nt of disease, but, as intimated, no definite nclusions can be reached unless the phar- ceutical product has been demonstrated to sess therapeutic activity. Fortunately, the present time, reliable preparations to be found in the market, and with per care in beginning with any new and tried preparation, no difficulty need be perienced from the inertness of the sub- nce. Within the past few years numerous ports have been published in which can- bis has been given the credit for results tained in the treatment of a number of affec- ns where it was combined with other rem- ies, and where it was evident that the her ingredients were quite as much enti- d to the credit as was cannabis. This is pecially noticeable regarding the reports ncerning its value in the treatment of *arrhœa, dysentery*, and other bowel troubles. hen this or any other drug is given singly any particular disease, followed by favor- ble results, and this method of treatment is peated again and again, we have at least an empirical basis for regarding with favor the particular drug that has been used; but when a drug like cannabis indica is combined with such preparations as chloroform, bismuth salts, or mercurial preparations, the conclusion that cannabis is the active drug must be set aside, because in many instances these remedies mentioned are sufficient in themselves to effect a cure. That cannabis has considerable power through its influence upon the nervous system in checking ordinary cases of diarrhœa and dysentery will not be disputed, but when given alone in these cases it has but little value.

The good effects of cannabis are more pronounced in the treatment of *abdominal affections* in which pain enters into the make-up of the morbid complexus, and where there is an absence of increased activity of the circulation. In other words, it appears to be more especially applicable in those disorders which might be regarded as functional in character, and which often present the well-known features of *neuralgia*. *Dysmenorrhœa* is one of these affections, and while this trouble may be, and frequently is, due to various causes, a considerable number of these cases are dependent to a great extent upon the condition of the blood, the habits of the patient, or some occult nervous derangement, which is temporarily subdued by the narcotic influences characteristic of the drug. It has been extensively employed for the relief of this disorder in combination with chloroform, one of our most efficient stimulants when taken internally, but not infrequently a few drops of chloroform alone are sufficient to overcome this malady. When there is undue activity of the circulation, upon which the pain almost wholly depends, gelsemium alone will be sufficient; but in the cases marked by grave nervous disturbances, the combination of *gelsemium with cannabis indica* is strongly recommended.

℞ Ext. cannabis indicæ, gtt. v;
Ext. gelsemii, gtt. x;
Pulv. acaciæ,
Aquæ, āā q.s. ad f℥iv. M.

Sig.—Take one teaspoonful every ten minutes for an hour, then hourly thereafter, until relieved.

The majority of these cases uncomplicated by displacements, such as seen in young girls and married women, will be promptly benefited, and the menstrual flow appears, when there is no further trouble until the next period. Occasionally we meet with cases in which it appears that the dysmenorrhœa is

dependent upon a debilitated condition of the system, in which chloroform is especially indicated owing to its stimulating action; but, in the absence of this preparation, the cannabis indica may be combined with small doses of nux vomica, as in the following prescription:

℞ Ext. cannabis indicæ,
Ext. nucis vomicæ, āā gtt. v;
Pulv. acaciæ,
Aquæ, āā q.s. ad f℥iv. M.

Sig.—Take one teaspoonful every ten minutes for an hour, then at intervals of one hour until the pain is relieved.

The foregoing prescription will be found efficient in the treatment of the incipient period of *delirium tremens*, which is often accompanied by an extremely irritable condition of the stomach and furious delirium, but the initial dose should be at least a tablespoonful. In all probability the first dose will be sufficient to arrest the vomiting, and, if the drug is pushed, the patient will gradually fall into a natural-like sleep, and awake several hours after greatly refreshed and entirely free from the threatening symptoms presented a few hours previously. The same method of treatment is particularly applicable to that form of *nausea and vomiting*, with excruciating pain, which now and then attacks persons previously in tolerable good health, but who are suddenly seized with colic, paroxysmal in character, and only partly relieved by the eructation of gas. A few doses are all that are required, and the patients wonder if it is possible that so great a pain could be so suddenly vanquished. Cannabis has been highly recommended for the relief of *menorrhagia*, but it is not curative in the true sense of the term.

As a remedy for the relief of *supraorbital neuralgia* no article perhaps affords better prospects than cannabis, but it must be given in small doses at short intervals in order to bring the patient as quickly as possible under its influence. Given in the manner indicated above, but a short time—one, or, at most, two hours—will be sufficient to bring the patient under its influence, provided the preparation is reliable, and if such results do not follow, the dose should not be increased, but instead a new preparation should be secured. For the *cough of phthisis*, and for the *chest-pains* which accompany that disease, cannabis is of great practical service, and as these patients are often unwilling to take medicine, or the stomach is in such a condition that the sight of any medicine is offensive, it may be used in these cases in the form of tablet triturates, each containing ¼ of a grain without compression. These tablets may be taken at intervals of ten minutes for an hour, then at less frequent intervals; but, instead of swallowing them they should be allowed to dissolve in the mouth, by which the effect is produced much more quickly than when taken into the stomach.

The action of cannabis upon the genito-urinary functions commends it for the relief of *impotence*, more especially when due to functional derangements, with a depressed condition of the vital powers, but in these cases care should be exercised that the drug is not given in too large doses. As synergists, it will be found advisable to combine with it small quantities of both nux vomica and damiana, as indicated in the following formula:

℞ Ext. cannabis indicæ,
Ext. nucis vomicæ, āā gr. v;
Ext. damianæ, gr. xx.
M. et fit. pil. no. xx.

Sig.—Take one pill after meals and at bed-hour.

It is also a useful remedy in the treatment of *gonorrhœa* as a pain-relieving agent, or in counteracting the tendency to the development of chordee, but its value in this direction must be comparatively slight unless given in large doses, and for that reason its use is not recommended.

Cannabin tannate and cannabinon have been put forward to take the place of the drug, but, unfortunately, only in exceptional instances have they been found efficient, probably owing to the changes effected by the chemical processes necessary in the course of their preparation. Clinical tests in several instances have shown that the tannate is a most *useful hypnotic* in the treatment of hysteria, being superior to either chloral or morphine, while *cannabine*, the pure alkaloid, is said to be a substance entirely different from the previously known resinoid called cannabin, and has been recommended as an innocuous and approved hypnotic medicament. Several cases of Basedow's disease (exophthalmic goitre) are said to have been favorably influenced by 5-grain doses of the preparation, given in the form of pill or with syrup and water, but its expense (one dollar and fifty cents per grain) precludes its use at the present time.

1910 Arch Street.

The Therapeutic Gazette

EDITED BY

ROBERT MEADE SMITH, A.M., M.D.,

Professor of Comparative Physiology, University of Pennsylvania,

PHILADELPHIA.

GEO. S. DAVIS,

Medical Publisher, Box 470,

DETROIT, MICH.

Philadelphia, 714 Filbert Street.

SUBSCRIPTION RATES FOR 1890.

(Journal increased to 72 pages each month.)

THERAPEUTIC GAZETTE (postage included).....$2.00

THERAPEUTIC GAZETTE with MEDICAL AGE..... 2.50

THERAPEUTIC GAZETTE with AMERICAN LANCET 3.25

THERAPEUTIC GAZETTE with AGE and LANCET... 4.00

Foreign subscriptions may be ordered through our agent in England, Mr. H. K. Lewis, Medical Publisher and Bookseller, 136 Gower Street, London. Price 10s. Remittances may be made either by Postal Order or Stamps.

Price to Foreign Subscribers direct (postage included), $2.50 (10 shillings). English postage stamps received on remittances.

Editorial communications should be addressed 332 South Twenty-first Street, Philadelphia. Articles intended for the Original Department of the GAZETTE will be accepted only with the understanding that they are contributed to it exclusively.

Business communications should be addressed to the Publishers.

Leading Articles.

CARDIAC DYSPNŒA: ITS PATHOLOGY AND TREATMENT.

THE dyspnœa of cardiac affections is either mechanical or toxic, or both. In the toxic forms it may exist independently of any appreciable affection of the respiratory passages by the simple fact of spasm of the arterioles; in the mechanical forms its essential condition is blood-stasis in the lungs; in all cases it may coexist with bronchitis and emphysema.

In stenosis or insufficiency of the mitral the dyspnœa is largely, if not altogether, mechanical, being due to pulmonary engorgement. In the earlier stages the dyspnœa may be but slight, and only felt on active exercise (the dyspnœa of exertion); the heart may be quite competent to clear its cavities, except when an extra task is put upon it; in the later stages the engorgement is constant and the dyspnœa permanent.

In the incipiency of aortic regurgitant disease, dyspnœa of a mechanical character is a frequent symptom; any sudden violent exertion may put the patient in agony for breath; the left ventricle is only able to clear itself during rest or moderate exercise. When the disease is advanced and compensation is broken, the dyspnœa may be constant, as in mitral disease; in fact, the cardiopathy is likely to be complicated with mitral lesion; it more often happens, however, that the dyspnœa is paroxysmal, coming on at night, thus resembling true asthma. The dyspnœa of fatty degeneration, of chronic myocarditis (fibroid heart), of dilatation from whatever cause, ordinarily assumes this paroxysmal character, though always produced or aggravated by exertion. The same remark is applicable to the dyspnœa of aortitis and arteriosclerosis, pathological states to which attention has been much called of late, since the publication of Huchard's able work. Various factors concur in the production of this paroxysmal dyspnœa. The dyspnœa may be purely mechanical, being provoked by any exertion that fatigues the heart, any condition or position of the patient that embarrasses the heart's action. The paroxysmal dyspnœa of aortic disease, of myocardial degenerations, etc., which is so prone to come on in the night-time, waking the patient out of his first sleep, and compelling him to sit up and tug for breath, has been attributed to the recumbent posture, the stomach and viscera, especially after a full meal, being forced upward with the diaphragm and encumbering the heart's area. Moreover, any concomitant bronchitis and emphysema is likely to be aggravated in the night-time and when the heart is fatigued.

The above explanation of the pathogeny of the paroxysmal dyspnœa does not quite satisfy Huchard, who sees in this dyspnœa a phenomenon of arterial hypertension: "*Selon moi le pseudo-asthme aortique est dû à la hypertension arterielle; or, celle-ci est augmentée par la station horizontale et sous l'influence du sommeil, comme elle s'élève aussi par l'effort de la marche et du mouvement.*" *

This hypertension greatly augments the peripheral resistances against which the heart has to contend, producing a spasmodic condition of the arterioles, which is more or less constant. Now, aortic disease, according to Huchard, is very generally associated with a

* "In my opinion this aortic pseudo-asthma is due to arterial hypertension; now, this is augmented by the horizontal position and under the influence of sleep, as it is also increased by the effort of walking and of movement" (Huchard, "Maladies du Cœur et des Vaisseaux," 1889, p. 132).

peculiar diathesis called *arterio-sclerosis*, which manifests itself by a more or less general atheroma or sclerosis of the blood-vessels. The kidneys, sooner or later, participate, undergoing slow degeneration, and becoming incompetent for their function; the blood, poisoned by retained waste products, irritates the lining membrane of the arterioles, still further augmenting the hypertension. Hence, the dyspnœa of aortic degenerative disease is not only mechanical, it is also toxic, owing to the impermeability of the renal emunctory.

The same explanation is applicable to degenerative diseases of the myocardium dependent on arterio-sclerosis.

In the treatment of cardiac dyspnœa the leading indications are, 1, to make the heart competent for its work; 2, to calm nervous perturbation; 3, to eliminate toxic elements which may be the cause of the dyspnœa.

The first indication is likely to be very difficult of fulfilment. The dyspnœa is generally a symptom of failing compensation, and digitalis, strophanthus, and other heart tonics confer only temporary, and more or less uncertain, benefit. The heart cannot by any medication be made sufficient for great tasks, and the best that can be done is to adapt the work to the capacity of the heart. In the early stages of mitral disease the dyspnœa is only felt on exertion; the patient should be enjoined to work moderately and tax the heart as little as possible. Persistence in labor of an arduous kind is sure to overcome the heart and precipitate all the evils of uncompensated dilatation; while it is possible that rest and a judicious antirheumatic medication (iodide of potassium and the alkalies) may stay any further progress of the endocarditis which spoils the valves, and favor the supervention of a compensatory hypertrophy. The same may be said of the endocardial lesions, and consequent dilatation and dyspnœa, attending aortic regurgitant disease, which is often a rheumatic affection, though it may accompany or follow any of the infectious fevers.

The diet should be of a nutritious and digestible character, consisting of nitrogenous aliments rather than of carbohydrates. A diet largely of meat or fish is more easily digested than a strictly vegetable diet; moreover, with the latter diet, one is more likely to overload the stomach, and this distention cannot fail to embarrass the heart.

Regular daily action of the bowels is desirable, and to procure this result gentle laxatives (hunyadi, rubinat, cascara, etc.) [illegible] be demanded.

When the dyspnœa attends asystolism [illegible] broken compensation, the flagging heart [illegible] be for a time sustained by the so-called [illegible] diac tonics,—digitalis, caffeine, strophi[illegible] thus, etc.

To calm nervous perturbation, a judicio[illegible] selection may be made from the vario[illegible] analgesics, antispasmodics, and narcotics [illegible] the materia medica. Hayden combines t[illegible] calmative with the tonic treatment; his fav[illegible] ite prescription is ten minims of the spirits [illegible] chloroform with fifteen minims each of t[illegible] tincture of digitalis and the tincture of p[illegible] chloride of iron in an ounce of water ev[illegible] three hours.

Among the "respiratory medicament[illegible] Professor Germain Sée speaks highly of "e[illegible] throphleum, in 20-drop doses of the al[illegible] holic tincture; in simple or cardiac asth[illegible] the respiratory movements become slo[illegible] and more ample under the influence of t[illegible] remedy."* The same writer recomme[illegible] iodide of ethyl and iodide of potassium [illegible] medicaments which directly favor the r[illegible] piratory movements by a specific effect [illegible] the medulla oblongata. The iodide of et[illegible] is given in the dose of 6 to 8 drops five or [illegible] times a day; the iodide of potassium in 10-[illegible] 15-grain doses three times a day. But, af[illegible] all, in grave cases, and sooner or later in a[illegible] resort must be had to hypodermic morphi[illegible] in doses sufficient to quiet disturbed nerv[illegible] action, allay spasm, and facilitate respi[illegible] tion.

Since the attention of the profession h[illegible] been particularly called to arterial hyperte[illegible] sion as a principal factor in the dyspnœa [illegible] aortic disease and of arterio-sclerosis, it h[illegible] been maintained that this dyspnœa is of to[illegible] origin, and weighty considerations have be[illegible] advanced by Huchard and others to establi[illegible] this view of the case. Huchard points to t[illegible] beneficial results attending the use of re[illegible] dies that lower arterial tension,—bleedi[illegible] purgatives, nitrite of amyl, and nitroglycer[illegible] —and especially to the utility of an exclusi[illegible] milk diet in combating these paroxysms [illegible] aortic dyspnœa, causing them often to dis[illegible] pear in the space of a few days. Now, t[illegible] medication, he says, acts in two ways a[illegible] fulfils two indications,—first, by the abu[illegible] dant diuresis which it provokes, the milk [illegible] minishes the arterial tension, and promp[illegible] eliminates the toxic principles contained [illegible]

* "Maladies du Cœur," 1883, p. 511.

d; secondly, it acts because it is bland harmless, and does not launch into the nt of the circulation, as do other ali- s, and meat in particular, materials h, being incompletely eliminated, become ily toxic to the economy.

ANALGESIC ACTION OF METHYLENE BLUE.

HE histological researches of the last decades in overthrowing the old dogma living matter was incapable of being sub- d to artificial coloration, while of the test value from a histological point of , are especially important as pointing that certain coloring-matters possess al affinities for definite organic tissues; the suggestion at once occurs that in this gical fact an indication for local thera- cs is to be found. If it is determined certain substances become deposited in in restricted tissues, as the list of these rials increases we may hope to find sub- es which may be capable of modifying rbed action in the tissues for which they especial affinity. Cellular therapeutics sed upon these data, and although yet in fancy the fact remains that we have def- proof that certain substances are ab- d only by certain cells, and, as a conse- ce of their absorption, modify the vital sses occurring within them. As yet we only been able to determine the occur- e of such absorption by the modification lor produced; in other words, the arti- colors, especially the aniline colors, are n to distribute themselves in certain ite directions. Among these methylene possesses a special interest, since it has found that this coloring-matter has a al affinity for the nervous system, and cially for the axis-cylinders of the nerve- s, whether sensory or motor. The dis- ry of this fact by Professor P. Ehrlich Dr. Leppmann (*Deutsche Medicinische henschrift*, June 5, 1890) suggested the loyment of methylene blue in affections e nerve-trunks, especially in painful af- ons; and they have accordingly sub- d their hypothesis to experimental study dministering it to twenty-five different s of painful nervous affections, such as matism of the muscles, tendons, and s, and in every case it proved more or efficacious in relieving pain. Their ies were made on the insane criminals in the Moabit prison in Berlin, and were, therefore, made on subjects subjected to the same conditions of hygiene, of alimentation, and to rigorous isolation, which facilitated absolute control of the patients, and reduced to a minimum any effects which might possibly be attributed to suggestion.

Their experiments were made with perfectly pure methylene blue, the experimenters laying great stress on the entire absence of even a trace of the chloride of zinc, a fact which they maintain to be of the greatest importance; for they claim that the purity of the coloring-matter is indispensable; that the coloration produced by the methylene blue be rigorously limited to the nervous element, while, further, the dangers of any poisoning are greatly reduced by the employment of a perfectly pure product.

The remedy was given in doses as large as 15 grains in a day in gelatin capsules without producing any toxic symptoms, although the usual doses were from 1½ to 4 grains internally and 1 grain hypodermically. Subcutaneous injections in two per cent. solution occasioned no pain and no local reaction other than a soft tumefaction, which disappeared in the course of a few days, while its administration, whether subcutaneously or by the mouth, produced no disagreeable results, no disturbance of the appetite, digestive functions, the bowels, or, in fact, any disagreeable after-effect.

With the exception of two cases out of forty who were the subjects of experiment, there was no vomiting; one of these was very anæmic and suffering from some cardiac affection, while the other had symptoms of an acute catarrh of the stomach. The rapid passage of the coloring-matter into the blood was demonstrated by the greenish tint of the urine, which occurred within fifteen minutes to an hour after the administration of the remedy. Within about two hours this tint became bluish green, and after four hours dark blue. To recognize these changes in the color of the urine, they found it, however, sometimes necessary first to warm it, when the change of tint was always detected. In addition, the saliva and the fæcal matter likewise assumed a bluish tint. Neither the skin nor the cornea ever acquired any blue discoloration.

The therapeutic results attained by these authors may be summed up in a few words.

In certain forms of localized painful affections methylene blue possesses marked analgesic action. This action was usually at-

tended with certain peculiar characters; thus, it usually manifested itself about two hours after the administration of the remedy, and continued to increase in intensity until analgesia was absolute, when the remedy had been given in sufficient dose,—1 grain when injected hypodermically, 2 to 4 grains when given by the mouth.

This course of the anæsthetic process is explained by Ehrlich on the grounds of the modifications which occur in the nerves of a living animal after methylene blue has been injected under the skin. In the first few hours in these cases the nerves acquire a diffused blue coloration, which finally gives place to bluish irregular granules in the axis-cylinder, and finally these granules disappear. It thus would seem that an insoluble combination is formed between the coloring-matter and certain constituent parts of the nerve-tissues, and, as a consequence, the chemical composition of the nerve is so modified that the analgesic action results from a loss of function of the nerve-trunk.

No direct influence was detectable on inflammatory swellings, and in various general disturbances, such as in the osteocopic pains of syphilis, round ulcer of the stomach, and neurasthenia, its effects were less evident. Favorable effect was, however, produced in two cases of migraine. No antipyretic action was discoverable. In many ways, however, this substance appears to act similarly to antipyrin, over which, however, it has the advantage of smallness of dose, cheapness, and the fact that hypodermic injections are absolutely painless.

THE THERAPEUTIC VALUE OF ELECTRICITY.

THE school of electro-therapeutists, which may be said to have been founded by Duchenne, has not made satisfactory progress during the last quarter of a century. The studies of this observer upon electricity in the clinic, founded upon some accurate anatomical and physiological knowledge of the muscular system, gave the subject an impetus which still survives to keep this agent before the profession, and to insure its recognition in spite of the abuses to which charlatanry or ignorant credulity have too often subjected it. Duchenne's work was chiefly upon an anatomical basis; his great aim was clinical results. The legacy which he left was a great mass of empirical observations on the action of electric currents upon the muscles and nerve-tissues in health and disease. His studies were almost entirely confined to the neuro-muscular apparatus. His method was one of simple clinical observation, without experimentation or very exact pathological findings. It is not too much to say that his followers have adhered to his method, and have not made much advance beyond him in the direction of what could be called accurate scientific work.

The defects of this method are numerous. The class of diseases to which electricity has been mostly applied by the followers of Duchenne includes the degenerative diseases of the spinal cord, nerve-trunks, and peripheral nerve-endings. The patients especially who are subjected to the current are those who suffer from acute or chronic anterior poliomyelitis, neuritis of traumatic or toxic origin, and sometimes the victims of ataxia and other systemic lesions of the cord. The morbid anatomy of these diseases is now fairly well understood. The clinical history and termination of many of them can be predicted with accuracy. It is, for instance, well within the bounds of probability that a facial paralysis due to neuritis will recover entirely, and that an infantile paralysis due to acute inflammation of the anterior horns will leave a residuum of palsy and wasting which may be permanent. The lesion in all these diseases is destructive. The repair is by a progressive building up of new tissue,—a strictly nutritive process, which requires time and favorable conditions, and cannot be done or assisted artificially, except in the most indirect way, as by the supply of food, hygiene, etc. Here is the gist of the whole matter. The question which forces itself upon the mind is whether galvanism or faradism can influence this process at all. Clinicians have answered this question almost unanimously in the affirmative, but there are dissenting voices of authority. It is hard to conceive how an electric current, applied hap-hazard on the skin of an arm or leg, can influence cell-growth in a nerve-trunk, or particularly in the spinal cord. Empirical methods and results are not to be altogether ignored, but it is, nevertheless, unfortunate that any therapeutic agent has to rely entirely upon an empirical record. This we think is the position of electricity to-day as applied to diseases of the motor apparatus, and justifies us in saying that the science has not advanced beyond where Duchenne left it.

The use of electricity in diagnosis by the

actions of degeneration has been thus far most exact scientific result; and while we lieve this test is not as widely applicable some have claimed, it is, nevertheless, now duced to accepted formulæ which seem stworthy and promise to be permanent.

In spite of what we have said, we think ctricity, as a therapeutic agent, has a ght future in some departments of prac-e. We refer now to its dissolvent action electrolysis. We wish to indicate here iefly a few cardinal principles upon which ne of its advocates do not sufficiently rely, d of which some of its determined foes pear to be completely ignorant.

The power of a galvanic current to break into its constituents a fluid medium, such water, through which it may be passed, is e of the elementary facts of electro-ysics. This power is exerted equally upon re complex fluids, such as solutions of mical substances, and also upon organic ids, such as blood, serum, milk, etc. ally, it is exerted upon organized tissue. us water is resolved into hydrogen and ygen, as may be readily observed upon ing a mild current through a tumbler of fluid. In compound fluids or salts the ids seek the positive, while the alkaline es go to the negative pole. The subsequent emical actions of these acids and alkalies e just the same as would be the case if they re introduced from without, and constitute e secondary action of electrolysis. Now, e important point which therapeutists have o much neglected is this: that these changes e in exact quantitative relation to the ength and duration of the current,—that is say, with so much current strength con-ued a certain time (or, technically, with so any *coulombs* of electricity), just so much ydrogen, oxygen, or whatever the simple om or compound radicle may be, will be berated. In such a simple fluid as water e figures of this problem are exactly known, ut in such a complex series of organized tis-es and fluids as exist in the human body while, doubtless, the changes are just as onstant and according to law) the figures re not known. It thus appears very evident hat the power of electricity to break down rganized tissue is not only indisputable, but hat it may even yet be reduced to an exact dosage, and that it thus fulfils the first re-quirement of exact science,—conformity to law.

We are perfectly aware that electrolysis in surgery becomes a practical question,—*i.e.*, whether it can compete with the knife? Into this rather vexed question we do not propose here to enter. Several most important issues are involved. Can it be always controlled with perfect safety to surrounding parts? Is it expeditious, clean, and attended with little pain? Can it be rendered antiseptic, or is it already so? Several indications are imperative. The dose must be adequate and must be applied direct, and not allowed to diffuse widely through the skin and mucous membrane; hence puncture is probably always preferable. Finally, the dosage must be studied with care to supply data for reference. That certain fibroid tumors, bronchoceles, nævoid growths in vascular regions have been successfully treated in this strictly scientific way is without doubt.

THE EFFECTS OF EXTIRPATION OF THE PANCREAS AND THE CŒLIAC PLEXUS.

WE have on two previous occasions referred to the results obtained by Dr. Lépine as to the influence of the pancreas on the destruction of sugar in the organism. The drift of his views appears to be substantiated by numerous papers which have recently appeared, which point to the almost invariable production of diabetes mellitus after extirpation of the pancreas. Thus Von Mering (*Zeitschrift für Klinische Medicin*, Band. xvi., Heft. 5 and 6) found that after extirpation of the pancreas, a genuine diabetes is produced in dogs, corresponding to the severest form of this disease in man. Grape-sugar was excreted in large amounts, the appetite was abnormally great, polyuria was present, and, in spite of abundant feeding, progressive loss of weight and feebleness were invariably noted. Together with these symptoms, grape-sugar, acetone, aceto-acetic acid, and oxybutyric acid were present in the urine, while there was increase of the sugar in the blood and decrease of the glycogen of the various tissues of the body.

Dominicis (*Centralblatt für Klinische Medicin*, June 7, 1890) has likewise produced permanent diabetes after extirpation of the pancreas, and he believes that disturbance of the digestive functions, brought about by the extirpation of the pancreas, leads to an alteration of the tissue-changes, which result in the production of diabetes. This is, however, a mere hypothesis, which the author does not attempt to prove, and which is by no means

as probable as the one suggested by Lépine and supported by Von Mering and Minkowski, which points to a specific function of the pancreas by which destruction of sugar is produced. Thus, Von Mering and Minkowski have found that if an animal is made diabetic by extirpation of the pancreas and fed with a definite quantity of grape-sugar, the whole of the grape-sugar is excreted in the urine, while if but a part of the pancreas be left, no diabetes is produced.

On the other hand, they state that these results are directly due to the removal of the pancreas and the prevention of the exercise of this specific function, and not to injury of adjacent parts, such as the solar plexus; thus Lustig, quoted in the *Medical Chronicle* for July, 1890, succeeded in removing the cœliac plexus from dogs and rabbits, and, although there was in some cases a temporary glycosuria, permanent diabetes was never produced.

This result was also confirmed by Peiper (*Medical Chronicle*, July, 1890). He never noted the production of diabetes insipidus, and only transient glycosuria in certain cases. Peiper's results are, therefore, opposed to the view that diabetes insipidus depends on the functional derangement of the cœliac plexus, and they also show that diabetes mellitus, following extirpation of the pancreas, is not attributable to injury of this plexus.

OXYGEN: ITS THERAPEUTIC HISTORY AND USES.

IT was but natural that when the properties of oxygen became known, it would be applied to the treatment of disease, and that the most extravagant expectations should have been entertained of this powerful vital stimulant. Its first medicinal applications were made in the treatment of phthisis. Priestly, in fact, shortly after the discovery of this gas, invented an apparatus for use in inhaling oxygen. Carllius, in 1782, was one of the first, if not the first, to treat phthisical patients by "dephlogisticated air;" in two cases he reported signal amelioration. Chaptal, Jurine, Bergius, and others, during the latter part of the last century, treated phthisis by oxygen inhalations, and noted that oxygen "ameliorated, calmed, and soothed, but did not cure;" in the words of Chaptal, "it smoothed the passage to the grave." In Fourcroy's nine cases "the respiration was facilitated, the expectoration restrained, t cough alleviated, but the fever seemed to aggravated, and the hæmoptysis and em ation promoted." This has been a frequ experience since Fourcroy's experiments; acutely inflammatory, febrile condition see to contraindicate the therapeutic emplo ment of oxygen. Further trials at the beg ning of this century showed that there was curative benefit to be derived from oxyg inhalations in phthisis, and the new treatme fell into neglect, to be revived many ye afterwards by Trousseau, Demarquay, L conte, Read, A. H. Smith, Hayem, Albrec and others. Read recommends inhalatio of 9 to 18 litres a day, cod-liver oil and cohol to be taken at the same time. Haye has shown that these inhalations arrest t vomiting of phthisical patients. Albrec whose trials date from 1881, has seen ame oration of cough, dyspnœa, and other d tressing symptoms. His later reports affi an arrest, in some instances, of the tube culous process, with diminution of cou dyspnœa, sputa, and the bacilli contained the latter. Dujardin-Beaumetz, while n very enthusiastic on the subject of the ox gen treatment of this disease, pronounc the inhalations as harmless *per se*, and ofte highly beneficial in palliating certain sym toms.

In other affections of the thorax, oxyg inhalations are even of more signal benef Beddoes was one of the first to recomme them in asthma; he claimed some startli cures. Riadore also affirmed the curati virtue of oxygen in essential asthma; furth trials, however, by other clinical experime ers have showed that these inhalations a only palliative; they certainly markedly a leviate and shorten the paroxysms. Mass Constantin Paul, Demarquay, Huchard, Be Gubler have all made trials of this reme in asthma, and attested to the benefits o tained. Dr. B. W. Richardson associat with these inhalations nitrite of amyl, a claims marvellous results. The respirati of 20 to 40 litres during a paroxysm ge erally suffices to relieve.* Gubler, howeve contests the utility of these inhalations i pure asthma.

In chronic bronchitis with emphysem and in whooping-cough, oxygen is said to of real efficacy in calming the spasmo element which accompanies these affection

* Dujardin-Beaumetz, "Dict. de Thérapeutiq article "Oxygen."

, Richardson asserts that it does good by nuating muscular irritability.

n the asphyxia of new-born infants, in hyxia by submersion, by coal-gas, car- ic acid, and all deleterious vapors, in oning by hydrocyanic acid, strychnine, sphorus, opium, oxygen by inhalation intravenous injections is said to have duced remarkable results, and where, in e morbid conditions, oxygen inhalations be resorted to, it would be unpardonable neglect the means of treatment.

In diseases of the circulatory apparatus, ompanied by dyspnœa, oxygen inhala- s give much relief; they do more good, cording to Huchard, in aortic than mitral spnœa. In the dyspnœa of Bright's dis- e the beneficial effect of this remedy is y marked. Moreover, the disappearance albumen from the urine under these in- lations in grave cases of Bright's disease is metimes most remarkable; the amelioration however, not very lasting. This peculiar ion of oxygen was first shown by Eckart, nstantin Paul, and Semmola.* In uric- d gravel, oxygen inhalations, according Ritter, cause a diminution in the uric acid the urine.

With regard to the application of oxygen halations to diabetes, first recommended 1865 by Durand-Fardel, while no cura- e benefit can be claimed for this treat- nt, yet amelioration of the principal mptoms has often been noticed, and it uld seem to be a valuable adjuvant to er therapeutic measures.

Among the vital stimulants of use in chlo- is and anæmia, oxygen deserves a respect- consideration. It was first recommended Fourcroy, afterwards by Beddoes, who af- ms its reconstituent properties. Mellingen d Riadore, still later Demarquay, Hayem, d Regnauld, speak in high terms of the efits of oxygen inhalations in the chlo- ic and anæmic. "They restore the ap- ite, arrest vomiting, arouse the nutritive vements, and augment the weight of the dy." Hayem calls oxygen the best adju- nt to iron in chlorosis or anæmia.

As for the mode of employment, the ap- ratus in common use is that of Limousin, some modification of the Limousin ap- ratus. It is a wash-bottle in which the s is passed through water; this wash-bottle is connected with a rubber bag, in which the gas is kept. The source of the gas is a mixture of chlorate of potassium and binoxide of manganese in a steel retort. The patient inhales the gas from the wash-bottle by means of a suitable mouth-piece and tubing.

Of late attention has been called to the external uses of oxygen, applied in the form of oxygenated water, of which the solution of peroxide of hydrogen of commerce is the type; it is a 15-volume solution. This solution is said to develop ozone in contact with diseased surfaces; its antiseptic properties are incontestable. It is employed in all cases where an active microbicide agent is required, being sufficiently diluted with water; in carbuncles, abscesses, foul (scrofulous, cancerous, syphilitic) ulcers, local gangrene, aphthous ulcerations, etc.

As for the solutions of ozone (so called), they are of very doubtful efficacy; while *ozonised air*—such as is found in nature's laboratory at the sea-side and on the mountains—is both bactericide and fortifying, and should be liberally tested during the hot season, especially by the debilitated and anæmic.

THE THERAPEUTIC PROPERTIES OF THE ANILINE COLORS.

AS is well known, Professor Kremianski some years ago advocated the employment of aniline as an inhalation in phthisis because of its great microbicidal power, and he has continued to employ this method, and claims for it considerable success. His views have obtained but little acceptation, it having been stated by various observers that the inhalation of aniline was very dangerous. In Germany especially his results have attracted considerable attention, and, as a consequence, the aniline colors have been made the subject of numerous chemical and therapeutic investigations, although the amount of contradiction which is to be found in the writings of various authors upon this subject render it very difficult as yet to form any positive conclusion as to the true facts in the case.

Professor Stilling, of Strasburg, devoted special study to the aniline colors and their employment in practice, and has, as we stated in a recent number of the GAZETTE, found that methyl violet possesses the highest degree of antiseptic power, and he claims that a one-tenth of one per cent. solution of this

* Dujardin-Beaumetz, "Diseases of the Kidney," a. ed., p. 142; also "Dictionnaire de Thérapeu- ," article "Oxygen."

substance could be injected under the skin of a guinea-pig to the amount of twenty cubic centimetres or more without causing any hurt to the animal. Half that quantity, however, if injected into the peritoneal cavity, proves fatal, the viscera, and especially the kidneys, with the exception of the Malpighian corpuscles, being colored blue. A few drops of the solution instilled into the eyes of rabbits colored the conjunctiva, but left the cornea—if this were uninjured—unaffected, the coloration disappearing the next day. Professor Stilling then employed this solution with marked success for the treatment of many eye- and other diseases, including scrofulous ulcers of the cornea, conjunctivitis, eczema of the lids, parenchymatous keratitis, serous iritis, disseminated choroiditis, sympathetic ophthalmia, whitlow, varicose ulcers of the leg, etc. A pure form of methyl violet for surgical purposes is now manufactured under the name of pyoktanin.

These results have, however, not been universally confirmed, and Dr. Mauthner, of Vienna, has just published a statement that he has been quite unsuccessful in his trials of this substance in a number of eye cases similar to those in which Professor Stilling has recorded such favorable results (*Lancet*, July 5, 1890). Dr. Carl (*Fortschr. de Med.*, 1890, No. 10) has likewise failed in obtaining satisfactory results. He experimented at first with fuchsin, gentian violet, methyl blue, and finally methyl violet for several months. He has employed the watery solution of methyl violet as an isolation in the eye in the treatment of affections of the conjunctiva, and as a local application, by means of thin camel's-hair pencils, to ulcers of the cornea. In affections of the conjunctiva he has found the methyl violet to be absolutely inert, while in infiltrated and superficial ulcers of the cornea, although methyl violet has seemed to somewhat reduce the signs of irritation, no such effects as claimed to follow its employment by Stilling, were ever observed; and since he employed atropine, in conjunction with the aniline colors, it is very doubtful as to what share is to be attributed to the latter. Besides, he reports a case of serpiginous ulceration of the cornea where methyl violet appeared to aggravate the course of the disease.

Dr. Braunschweig has likewise published results which tend to reduce the enthusiasm which might be expected to follow Stilling's work (*Gazette Médicale de Paris*, No. 24, 1890).

Dr. Braunschweig experimented as to the antiseptic properties of the aniline colors in the ophthalmological clinic of Professor Grafe, of Halle, and although he found that their instillation in the eye gave rise to symptoms of poisoning, yet solutions of these coloring-matters always produced a slight sensation of burning, which, although in some instances only lasting for a few moments, in other cases persisted for a quarter of an hour or more, and became so violent that an application of cocaine was necessary to produce relief. In cases where the conjunctiva was perfectly healthy, the application of the aniline colors was always followed by a sensation of burning, even when lightly touched with a pencil containing the coloring-matter. Sometimes also pronounced ciliary injection was produced, with hyperæmia and considerable tumefaction of the conjunctiva, and in three cases of parenchymatous keratitis these conditions were especially marked.

In some cases treated with yellow aniline (auramine) yellow vision was produced, evidently due to the rapid diffusion of the coloring-matter in the aqueous humor and vitreous body, and lasted for about half an hour.

Braunschweig, in summing up his results, groups his cases into three different classes.

The first group is by far the smallest, and in this he claims that some salutary effect was obtained. One was a case of panophthalmia which was evidently improved by the employment of methyl violet. So also a case of ciliary blepharitis was likewise favorably influenced by this substance.

The second group comprises (the majority of the cases) those cases in which the influence of the medication was absolutely negative, while the third group comprises those cases where the application of the aniline colors produced aggravation of the ocular disturbance. Thus, in cases of conjunctivitis with abundant secretion, pseudo-membranous infiltrations were observed in many cases, while symptoms of parenchymatous keratitis and trachoma, in which the conjunctiva was normal, became complicated with conjunctivitis.

It is, however, from the point of view of antisepsis, or as bactericides, that the aniline colors have attracted especial attention; and although Janicke (*Gazette Médicale de Paris*, No. 26, 1890) has found that most of the aniline colors, especially the methyl violet, possess considerable microbicidal properties, yet even

ibacteriological action is considerably re-
ced when exerted upon micro-organisms
pended in blood serum, a fact which very
ely detracts from any practical applica-
n of these substances as bactericides; and
ough it has been found that the solution
these coloring-matters gave good results
disinfectants for the hands and instru-
nts, the process of coloration is a marked
dvantage; but, on the other hand, the oc-
rence of the coloration may be regarded
some respects as an advantage, as it en-
es us to determine the contact of the dis-
cting fluid with the surface which it is
ired to disinfect, so that perhaps then the
l of usefulness of these coloring-matters
be restricted to the disinfection in dilute
tion of wounds, abscesses, and various
ities of the body where ocular evidence
he production of disinfection will be ob-
ed in the blue coloration produced.

Dr. Petersen, of St. Petersburg, publishes
Wratsch, 1890, No. 20, the results of his
eriments as to the antiseptic action of the
line colors in forty cases of venereal affec-
s, and he has found that, whether em-
ed in the form of a powder, 2 parts to
o, or in a solution 1 to 2000 or 1 to 1000,
the treatment of venereal ulcerations
lts have been obtained by means of the
line colors which are quite comparable to
e produced by iodoform, while the dis-
eable odor of the latter is wanting. So
in cases of soft chancre, gummatous ul-
tions, and syphilitic or gonorrhœal ulcers,
results are claimed to have been satis-
tory.

Bresgen (*Deutsche Medicinische Wochen-
rift*, 1890, No. 24) has employed the ani-
e colors as topical applications after the
of the actual cautery or chromic acid on
mucous membrane of the nasal chambers,
he claims that they produce a salutary
uence on the inflammation and suppura-
n consecutive to the cautery, and he be-
es that their employment reduces the
ation of the treatment by means of caus-
applications.

Finally, Professor Sée and Dr. Morau (*La
decine Moderne*, July 10, 1890) published
e results of their experiments as to the an-
ptic power of the different aniline colors
as to their therapeutic applications, and
y claim that the aniline colors of the aro-
ic series, when deprived of phenol and
enic, are not toxic.

Their antiseptic power they find to vary in
ferent instances. The most active in this respect being malachite green, methyl violet, and safranine, while in very dilute solutions, 1 to 2500, they find that they favorably modify suppuration, and in certain cases may prevent its occurrence. Thus, for example, they report a case of tonsillitis in which a commencing suppuration appeared to be aborted by the application to the tonsils of a solution of malachite green 1 to 2500 in strength.

Reports on Therapeutic Progress.

NEW METHODS FOR THE TREATMENT OF ACUTE GONORRHŒA.

In an essay with the above title, published in the *Zeitschrift für Therapie*, May 15, 1890, DR. KOPP publishes his own experience, and an analysis of some eighty different papers, which were published on this subject in the last few years, beginning with the consideration of the prophylactic measures recommended by Hausmann.

This method, which the author designates as rational, but as impracticable, consists in the injection of a one per cent. solution of nitrate of silver, or an equally strong solution of corrosive sublimate, into the fossa navicularis, so as to disinfect the locality in which gonorrhœa must first start.

Welander's abortive treatment, which consists in rubbing vigorously the internal surface of the urethra with pledgets of cotton, and then immediately pencilling the interior of the fossa navicularis with a two per cent. solution of nitrate of silver, only, in the author's hands, succeeded in a very few cases in aborting gonorrhœa within twenty-four hours after the injection. While the use of a ten per cent. solution, as recommended by Daday, is very properly regarded by the author as an extremely dangerous method, and one which is apt to cauterize the urethra up to the juncture of the bulbo-membranous portion.

If the time for abortive measures is past, Dr. Kopp recommends mild antiphlogistics, rest, regulation of the diet, treatment of the symptoms as they arise, either by internal medication or injection. His experience in the employment of internal measures in gonorrhœa has been very unsatisfactory, although he admits that the remedies recently recommended, such as the calcium sulphide, kwa-kwa, etc., have not been enough tried to warrant giving an opinion as to their value. So also in the case of the East Indian sandal oil, so warmly recommended by some author-

ities, he has been unable to testify as to any favorable influence either in acute or chronic gonorrhœa. His views on the subject are, that gonorrhœa is an eminently local inflammation, and it, therefore, can only be successfully treated by local measures. He has tested solutions of boric acid, potassium permanganate, ten per cent. solutions of iodoform oil, lime-water, boro-glycerin, pyrodin, peroxide of hydrogen, hot injections of quinine, sulphur oil (?), eucalyptus, potassium carbonate, etc., but none of them seem worthy of confidence, and he states that he was only satisfied with the injection of dilute nitrate of silver after preliminary hygienic measures had been employed, when the quantity of the discharge commenced to decline. In some of his cases the discharge ceased within eight to ten days.

He has obtained very little success from the use of sublimate injections, and likewise the sublimate bougies have proved unsuccessful in his hands.

Resorcin, in three to four per cent. solution, seems to promise good results, but it has not been sufficiently employed to admit of any conclusions as to its value. Sulphate of thallin, in two and a half per cent. solution, or as thallin antrophores, are likewise, in his opinion, absolutely worthless in the treatment of acute gonorrhœa.

THE PROPHYLAXIS OF CONTAGIOUS DISEASES.

According to the Paris correspondent of the *Medical Press and Circular* (June 18, 1890), at the Académie de Médecine, M. GRANCHER (Pasteur's principal assistant) spoke at great length on the prophylaxis of contagious maladies, which he considered to be one of the most important questions of contemporaneous medicine. To realize this influence we have two means at our disposition,—isolation and antisepsis. In surgery and obstetrics, he says, antiseptics seemed sufficient, as the problem is relatively simple, since it is reduced to the protection of a wound. In medicine, the question is more difficult, and isolation was the method recommended and employed by the majority of medical men. But there is *isolation* and *isolation*—as was well perceived by the physicians who had charge of children's hospitals in the matter of the special wards for diphtheria and measles—which did not render the services anticipated. At the Hôpital des Enfants Malades in Paris, for instance, the contagion of diphtheria and measles did not
minish consequent on the creation of sp
wards. Certainly the number of ext
cases diminished in the general wards,
the germs of these two affections kept u
contagion the rate of morbidity and mo
ity. The efforts against contagious dise
consequent on the method of isolation, h
not been crowned by the success desi
and M. Grancher thought that med
antisepsis would render very signal
vices. Isolation could never suppress
chance of contagion, and without antisep
it would, on the contrary, create a new sou
of danger,—as when patients suffering fr
the same malady are packed together in
same ward, the secondary affections of t
malady or its complications would beco
multiplied. In the measles wards M. Gran
found that broncho-pneumonia and diphth
raged with intensity, creating thus the t
danger of the primitive affection. Fully c
vinced of this fact, he wrote in 1888 to
hospital administration, asking for th
things,—a perforated metallic screen, a w
basket for each bed, and a supplement
nurse for each ward. The screen was fo
ing, and surrounded the bed so that e
child was isolated completely from
others, and yet not entirely deprived
their company, as the perforations w
large enough for it to see all that
going on around it. The wire basket
for object the easy disinfection of all
plates, cups, etc., which were used by
patient. When the nurse brought the ch
its food, she spread on the bed an in
rubber napkin, and the repast finished,
whole was taken away in the basket
plunged as it was into boiling water. T
supplementary nurse had sole charge of
the children placed thus in quarantine,
was not allowed to go near any other.
this method he obtained a reduction in
number of internal cases of contagion,
this reduction was much more marked
diphtheria than in measles.

THE PHYSIOLOGY OF THE RECURRE NERVES.

At the meeting of the Société de Biolo held May 31, 1890, DR. LIVON, Professor the Medical School of Marseilles, mad communication as to the physiology of recurrent laryngeal nerves (*La Tri Médicale*, June 5, 1890).

In spite of the numerous works publi

the physiology of the laryngeal muscles, e question as to the innervation of these scles has not yet been elucidated, and e greatest divergence exists in the opin-s of different physiologists as to this int. It is only sufficient to refer to the st recent works on physiology to notice w different are the opinions of various thors as to the *rôle* played by the recur-nt nerves, the principal source of supply of e motor nerves of the larynx.

Thus Donaldson admits that stimulation the recurrent nerves invariably gives, with feeble current, either slowly or rapidly in-rrupted, dilatation of the glottis, and that clusion is always produced by strong cur-nts, whether slowly or rapidly interrupted.

Franklin Hooper, on the contrary, at-ibutes an important *rôle* to the degree of pidity of the interruption; according to m occlusion is produced more rapidly by creasing the number of vibrations than by gmenting the intensity of the current.

Dr. Livon, in renewing the investigations this subject, to avoid error caused all va-ations in the glottis to be automatically re-orded, his experiments being made upon the g, the animals being anæsthetized by intra-eritoneal injections of morphine and chloral, e trachea sufficiently opened to permit of sy respiration, and then a little rubber bag troduced between the vocal cords, the rub-er bag being connected with the registering ver. Thus it is a simple matter to register e time and rhythm of excitation of the glot-s. The tracings which the author so ob-ined seem to establish that with a feeble citation of 18 or 20 interruptions a second ere is rhythmical contraction in the muscles the glottis, with dilatation of the latter, the me rhythm with a moderately strong cur-ent produces the same result, while the same rrent with an extremely rapid rhythm pro-uces complete occlusion.

If during a single stimulation the rhythm the interruptions is varied, the effects pro-duced are different even with intense cur-rents.

Slow interruptions produce isolated mus-cular contraction, with tendency to dilata-tion; repeated interruption causes occlusion, with persistence of muscular contraction.

If with a rhythm of 25 to 30 the intensity of the current is varied, the occlusion becomes more and more complete.

The first result obtained is not dilatation, ut slight, distinct muscular contraction, and hen occlusion commences.

Again, in varying the rhythm of the stimulation of the recurrent nerves, there is produced distinct dilatation or absolute occlusion. Livon, however, adds that in the numerous experiments which he has made he has never been able to obtain simple dilatation of the glottis without muscular contraction isochronous with the stimulation.

TREATMENT OF CYSTIC GOITRE, RANULA, AND OTHER CYSTS WITH CHROMIC ACID.

In the *Lancet* for June 21, 1890, DR. EDWARD WOAKES describes what appears to us to be an entirely novel method of treating certain cysts. The method suggested itself to him by his experience about six years ago, when he had under treatment a woman, aged 50, for fibro-cystic goitre involving the right lobe of the thyroid body. The cyst, which extended to within an inch of the angle of the jaw, had been tapped and injected with concentrated solution of tannin, with the result of securing apparent obliteration of the cavity. She continued under occasional observation while the fibrous portion of the tumor was dealt with, when, after an interval of some months, it became apparent that the cyst was refilling. In the course of a few weeks the contents, consisting of a thin purulent fluid, found an exit through the cicatrix left after the original tapping, with the consequent formation of a sinus, through which the offensive fluid continually issued. Thus was established the exact nuisance which the method originally adopted was designed to obviate. The difficulty of treating the cyst through the sinus was increased by the fact that during the lengthened absences of the patient, a portion of its now tortuous course passed through recently-formed and still growing hypertrophic gland-tissue. Under these circumstances Dr. Woakes adopted the plan of passing a probe, previously dipped for three inches of its length into a saturated solution of chromic acid, through the sinus into the cyst cavity. This was done several times in three successive weeks, when, after an interval of non-attendance of some five weeks' duration, a brown, tough material was found protruding from the wound. Traction on this drew out a rolled-up mass of the same substance, which when spread out had the appearance of leather, and was about the size of the palm of one's hand. It was undoubtedly the wall of the cyst, altered and probably destroyed by contact with the chromic acid,

and thereafter got rid of as described. It is needless to state that after this deliverance the cystic part of the trouble was ended. The enlarged isthmus and right lobe of the thyroid body required a period of further treatment, but ultimately recovered. It should be understood that no such extrusion of a well-formed cyst wall occurred in any subsequent case treated on the basis furnished by that just recorded, a divergence due no doubt to the improvement in the method of using chromic acid adopted as the outcome of this first crude experiment. In fact, the original cyst wall in the foregoing case had been converted into a pyogenic membrane by the early treatment, and this, being deprived of its vitality by the action of chromic acid, was at a later period cast off by the adjacent healthy tissue.

Shortly after the conclusion of the preceding case,—that is, in October, 1884,—a very similar one as regards situation and size occurred in the person of a younger woman, aged 30. Dr. Woakes had not at this time realized sufficient confidence in the use of chromic acid, so proceeded, as in the former instance, to tap and inject solutions of tannin. The purulent contents were evacuated on the fourth day. No attempt at adhesion or even of diminution of the cavity followed; the cyst was simply changed into an abscess, which discharged through the trocar wound. As no sign of improvement was apparent after three weeks, a canula (without the trocar) was reintroduced, and the cavity carefully emptied of its contents. Instead of the probe dipped in acid and passed through a sinus, it was now practicable to introduce it through the canula. This was done by means of the "acid carrier," an instrument which holds a definite quantity of the fluid at its distal end, and enables the operator to apply the acid directly to the boundaries of the cavity. This being done, the patient was directed to keep her bed, and to apply ice if any trouble followed. Nothing, however, occurred, and at the end of a week adhesion was complete. There has been no return of the cyst since.

In the third case, also a female, there existed fibro-cystic enlargement of the left lobe. Supported by the foregoing experiences, it was resolved to treat this case solely with the chromic acid. The cyst was tapped with the trocar and canula, and when empty, without withdrawing the latter, the "carrier" charged with chromic acid was introduced through it, and applied directly to the cyst wall. On the fourth day, the wound being still open, and though the tumor was shrinking satisfactorily, it was deemed desirable to introduce more acid, which was done without the intervention of the canula. This was probably an unnecessary precaution, as the cyst disappeared from this time, and the wound healed rapidly.

The next case came under treatment in the early part of 1889. The patient was a man aged 30. Inasmuch as a second cyst appeared at a widely distant part of the goitre from that first treated, it may be regarded as furnishing two examples of this method of dealing with cysts. The right lobe was dense and fibrous, while a small but prominent cyst occupied the middle line, and was clearly connected with the isthmus of the thyroid body. It was tapped, when about six drachms of clear straw-colored fluid escaped. The acid was then applied exactly as in the preceding case. The wound was closed, and the patient kept in bed for three days by way of precaution. There was absolutely no symptom, and at the end of a week no trace of the cyst could be detected. After an interval of a month the patient returned for treatment of the hypertrophied right lobe, when a second cyst was observed on the outer border of the tumor, just above the clavicle. Although fluctuation was distinct, the amount of fluid was small, and the swelling formed by it was rather broad than prominent. It was, however, tapped, when two drachms of fluid escaped, and was followed by rather free bleeding. On cessation of the latter the acid was introduced as before. The wound healed at once, but the cavity refilled very rapidly, owing, as it seemed, to the acid having been neutralized by the blood remaining in the cavity before reaching its boundaries. The operation was repeated after a few weeks, with the result of securing an equally rapid obliteration of the second cyst as was witnessed in that connected with the isthmus. So complete was the disappearance of this cyst that its former site was selected on account of its accessibility—outside the edge of the clavicular portion of the sterno-mastoid muscle—for introducing the needle of the hypodermic syringe in the later treatment of the fibrous portion of the disease by means of injections of tincture of iodine. The negative results of the first operation, due to the presence of blood in the cavity, needs only to be recalled to suggest its proper lesson.

Some twelve months previously to the attendance of the last-related case, in 1888

ung butcher, aged 20, presented himself at e out-patient clinic of the London Throat ospital for the treatment of a large ranula. his occupied the right side of the floor of e mouth, nearly filling that cavity, and rther projected below the jaw on this side, a large elastic swelling the size of a hen's gg. The case had been already under treatent in a provincial hospital, where, on two casions, portions of mucous membrane had en excised with the usual unsatisfactory exrience. No sooner did the wound heal than e swelling returned. Under these circumances the remarkable efficacy of chromic id in bringing about the abortion of cysts turally occurred, and it appeared justifiable adopt a similar course in the present inance. Accordingly a small incision was ade in the most prominent portion of the mor in the mouth, and through it the thick latinous contents were carefully evacuated. here was no bleeding. Explored with a unt probe, the cavity was found to extend nder the tongue almost to the opposite jaw. he wound gaped freely, and allowed the rrier charged with solution of chromic acid be applied to its inner surface. Probably t more than five drops of the solution were us introduced. The patient was put to ed, a precaution which again proved unecessary, as no sign of irritation, either local general, followed. At the end of a week here was no trace of swelling or enlargement any kind. It was possible, however, to inroduce a probe, with some persuasion, for a ort distance into the wound; all beyond is point was firmly adherent. Although robably a superfluous proceeding, it was eemed expedient to reapply the acid to this inus, after which it rapidly healed over, very trace of the disease having disappeared in ess than a fortnight from the commencement f the treatment. Some two or three weeks ater the patient returned for inspection. He was then quite well, and has since remained so.

Whether the treatment of ranula by chromic cid has been adopted by others, either before r since the occurrence of the case just quoted, s uncertain, but if this plan should prove to e a new departure, one successful example s insufficient evidence on which to recommend any new method of treatment. This instance is introduced here with the hope that it may convey a serviceable suggestion to some member of the profession whose experience of the disease, when treated on the rdinary lines, may have proved unsatisfac- ... nd disappointing.

Regarding the precise action of chromic acid on the walls of cysts, or, indeed, on living organized tissues generally, it does not appear that any very exact evidence exists. Repeated observation points to the complete and rapid amalgamation between the tissues and the acid itself, to such an extent that thereafter neither the one nor the other retains its former physical characters. This is especially the case with the acid, and constitutes its chief recommendation for the uses to which it is usually put, and which uses appear to be by no means exhausted. Should the author's experience in the direction indicated in this paper meet with corroboration, it does not seem improbable that the ingenuity of surgeons working in a wider field may find in it a useful substitute for more heroic methods, when the object sought is to bring about the obliteration of cavities, the chief obstacle to which is the secretory proclivities of their limiting walls.

A CASE OF EXTREME SLOWNESS OF THE PULSE.

In the *Centralblatt für Klinische Medicin* for June 7, 1890, DR. GILBERT, of Dresden, adds another case to the collection published by Dr. Prentiss in a recent number of the THERAPEUTIC GAZETTE. The case was that of a widow, 60 years of age, who had for a long time been treated for tertiary syphilis. She had cutaneous and osseous evidences of the disease, but no brain symptoms, and she had always taken potassium iodide with success. On March 15 she complained of stabbing pain between the shoulder-blades, cough, depression, and loss of appetite. There was found to be slight pleurisy on the right side and bronchitis. She was put in bed, poultices applied, and iodide of potassium given internally. There were no heart symptoms, no vomiting nor dizziness. Two days later, the pulmonary symptoms having greatly improved, and no other morbid symptoms being present, there appeared a gradual slowing of the pulse to 30 to 32 beats in the minute. Percussion did not show any enlargement of the heart, and the sounds were perfectly normal, the radial arteries were somewhat tortuous and rigid, the pulse was regular, full, and occasionally dicrotic; there was no fever.

On the next day, in spite of continued improvement in the catarrhal symptoms, the pulse had fallen to 22, was small, and dicrotism was no longer noted.

On the following day, as a result of free administration of wine and camphor, the pulse increased to 24 beats, but still remained very small. At the same time the sensorium became affected, diarrhœa, profuse sweating, and, finally, incontinence of fæces and urine took place.

On the next day—that is, six days after the first day the woman was seen—the pulse was 20 to the minute, and continued so until death.

Dr. Gilbert adds that the pulse was perfectly regular up to the last. The subjective symptoms, so long as the mind was clear, consisted of shortness of breath, dizziness, and increasing weakness. The lungs and heart were repeatedly examined both by the author and Dr. Meinert, and there were no heart murmurs then detectable, and only slight catarrhal symptoms in the right lower lobe of the lung.

The probable diagnosis, although the author admits that it was extremely doubtful, was gummatous tumor of the brain. Dr. Gilbert also alludes to a similar case published by Dr. Bohm in the *Centralblatt für Klinische Medicin*, No. 20, 1890.

BRAIN SURGERY.

At the meeting of the Royal Academy of Medicine in Ireland, held May 9, 1890, Mr. Thornley Stoker read a paper, in which he reported two cases of brain-disease on which he had operated (*British Medical Journal*, June 28, 1890). The first was a case of abscess in the right temporal lobe, depending on disease of the ear. Pain, retraction of the head, and right anosmia were the leading brain symptoms. On March 9, 1890, the brain was exposed with the view of exploring the cerebellum, if pus should not be found in the temporal lobe. The trephine opening was placed, with the purpose of exposing the second temporal convolution, with its centre one inch and a quarter behind the external meatus, and one inch and a half above this base line. Mr. Thornley Stoker spoke of the mistake made by Mr. Barker in placing the point to expose the second convolution too low down,—namely, one inch and a quarter above the base line; and he demonstrated, by a number of Professor Cunningham's models and drawings, kindly lent for the occasion, that the point indicated by Mr. Barker could only expose at highest the inferior convolution, and might even endanger the lateral sinus. He expressed his intention in future of operating one inch and three-quarters above the base line, at which height one there would be reasonable certainty of exposing the second convolution. Nine exploratory punctures were made in different directions, and on the ninth, at a distance of one inch and a half from the surface of the brain, pus was found, to the amount of two or three drachms, lying above the tentorium in a direction downward, inward, and backward from the trephine opening at the junction of the under surfaces of the temporal and occipital lobes. The patient was now three months after trephining, doing well. Although she had lost several drachms of brain matter by sloughing and by the removal of a hernia cerebri, she suffered no paralysis or impairment of any kind, the sense of smell being restored and all her symptoms relieved. The second case was one of a spindle-celled sarcoma, of small size, situated in the superior and back part of the right parietal lobe of a man, aged 41. It had given rise to tonic spasms of the left side, commencing in the leg and gradually invading the trunk, upper extremity, and face. Spasm was followed by paralysis, occurring in the same order from below upward. The leg and arm centres were exposed, but the tumor was not discovered, as it lay at the extreme back of the leg centre and was of the same consistence as the brain substance, so that instruments passed through it without resistance. The removal of pressure afforded by the operation gave temporary relief. The patient, who was nearly comatose and quite hemiplegic, recovered consciousness and partial power in the side, but died three weeks afterwards. The chief points of interest in the case were: 1. The irregular position of the spasms, which sometimes engaged the upper extremity without the lower, although the tumor proved to be remote from the arm centre. Mr. Thornley Stoker dwelt on what he termed "referred" pressure, as an important and confusing factor in such cases. 2. That the position of the tumor pointed to the extension backward of the leg centre into what had been regarded as a doubtful region. 3. That the case showed the leg centre to be behind that for the thigh. 4. The absence in this instance of three of the four classical symptoms of brain tumor,—namely, optic neuritis, fixed headache, and vomiting; only the fourth hemispasm, being present.

E INFLUENCE OF COCAINE ON MUSCULAR CONTRACTION.

Nearly all authors who have studied the siological action of cocaine are in accord h Anrep in admitting that it does not ex- any influence on the muscular system, Kobert, in viewing its action on frogs, ms that in small doses cocaine is without on, while in large doses it increases mus- r contraction.

rend, in 1885, in experimenting on a man, its that cocaine has no direct action on cles or motor nerves, but exercises an in- ct action by placing the organism in a t favorable condition for liberating gy.

erthold, on the other hand, claims that drug possesses a paralyzing action on the cles of the frog, which he interprets as ly due to fatigue.

lmes found in the frog an insignificant inution in the muscles submitted to the on of cocaine, while, according to the t recent work of Feinberg, the reaction he muscles and nerves of the dog is un- rbed by the action of cocaine.

his rapid sketch as to the views of differ- authorities on this subject shows that there ill considerable uncertainty as to the ac- of cocaine on the muscular system, one might believe that in this respect cles differ from protoplasm in general; act, the experiments of Kratizki on the lyzant properties of cocaine shows that ine arrests the movements of the mimosa ica and paralyzes the protoplasmic amœba white blood-corpuscles and arrests the ements of cilia.

Dr. Aducco, in his work on the functions he spinal cord, likewise mentions that he observed the same effect in vorticella other protista, and that under the influ- e of cocaine he has seen all protoplasmic ement of the infusoria arrested.

n order to throw further light on this sub- , Dr. Ugolino Mosso has made a large nber of experiments on the muscles of the , the dog, and man, and his results are lished in the *Journal d'Hygiene* for June 1890.

he author believes that his experiments rant him in concluding that, after pro- ged exercise, cocaine has considerable er in re-establishing the normal condi- s, whether of voluntary contraction or of traction under mechanical stimulation of fatigued muscles. 1½ grains of the hydrochlorate of cocaine, according to the author, suffices to almost double the amount of work accomplished by voluntary contraction, and that under these circumstances the sensation of fatigue will entirely disappear. The author, therefore, believes that cocaine, independent of its action on the nervous system, exercises a direct action on the muscles; although in small doses it augments their contraction, in large doses it diminishes them. For this reason the author does not admit the hypothesis of Dr. Baldi. He would explain the mechanism of the action of cocaine as attributable to its producing a greater resistance to fatigue. Finally, the author maintains that cocaine administered to man in doses sufficient to do away with the sense of fatigue not only does not obtund sensibility, but even exaggerates it, and the author states that he is at present engaged on a study of cocaine, which seems to show that cocaine in small doses tends to increase sensibility, especially tactile, while at the same time shortening the time of physiological reaction, accelerating the pulse and respiration, and greatly increasing the quantity of inspired air.

THE ABORTIVE TREATMENT OF GONORRHŒA.

According to the Paris correspondent of the *Medical Press and Circular* (June 18, 1890) M. Malècot has devised and recommended the following method for abating an acute attack of gonorrhœa: After making the patient micturate, and washing his urethra out with a weak boric-acid solution, the author injects an ordinary syringeful of a 1 in 50 solution of nitrate of silver, and on the following days 1 in 100, or even 1 in 150. The solution is allowed to remain two or three minutes in the urethra. At the same time as the injections are being used, the author prescribes frequent injections of some antiseptic solution. He prefers the following: .05 centigrammes of salicylate of mercury in 100 grammes of water, at a temperature of 30° to 40° C. A cotton tampon impregnated with the antiseptic should be kept fixed in front of the meatus urinaris, so as to absorb the pus as it escapes, and the tampon should be changed as soon as it is soiled. From six to eight sandal-wood-oil capsules are also prescribed for a dose. As the result of this treatment, the author states that he has often obtained successfully, and without ill consequences, the cessation of an

attack of gonorrhœa, even when there was a profuse flow of pus in from three to four days.

THE BROMIDE OF ETHYL AS AN ANÆSTHETIC.

Quite a number of articles have recently been published on bromide of ethyl as an anæsthetic, which seem to indicate that this agent is again acquiring a certain amount of repute in minor surgical operations. In the *Journal de Médecine de Paris* for June 15, 1890, is an abstract of a number of papers from various authors advocating the use of bromide of ethyl as an anæsthetic.

SZUMAN and THORN confirm the experience of Asch and Pauschinger as to the applicability of this substance for the production of anæsthesia in slight operations not lasting more than a few minutes and in practical obstetrics. They recommend to apply a chloroform mask directly to the nose and mouth, and to moisten this with ¾ to 1 ounce of the anæsthetic. With this amount of anæsthesia painful sensation is completely suppressed, while tactile sensibility and consciousness are generally preserved. Dr. Szuman goes still further and recommends the employment of bromide of ethyl in graver operations as in the extirpation of goitre or ovariotomy.

Dr. Gilles, of Cologne, is stated to have applied the bromide of ethyl in more than four hundred and fifty cases of operation on painful teeth, and has come to the conclusion that we possess in the chemically pure bromide of ethyl an excellent anæsthetic, acting with promptitude and certainty, and, when carefully administered, without danger, and an anæsthetic which cannot be too highly recommended to dentists, as it is superior to chloroform, nitrous oxide, cocaine, and all other anæsthetics. In order to obtain complete analgesia, Szuman and Gilles are in accord that the bromide of ethyl should not be poured upon the anæsthesia mask drop by drop, but that the cloth should be thoroughly saturated, and then closely applied to the mouth and nose, since the simultaneous inhalation of air in any quantity greatly diminishes the effect.

The amount of bromide of ethyl required to produce complete anæsthesia will rarely exceed 150 to 300 drops. The effect is evident in half a minute, while in children even a smaller quantity will produce anæsthesia in about fifteen seconds. It is stated that these authors have observed no secondary dangerous symptoms, especially no diminution in the pulse, and no difficulty in respiration.

THE PROPERTIES OF SODIUM SILICO-FLUORIDE.

It is about two years since sodium silico-fluoride was introduced as an antiseptic agent, apparently constituting the trade-marked antiseptic "salufer," and although this double salt has been more or less extensively used, but little evidence has been brought forward as to its chemical properties and physiological action. The readers of the GAZETTE are already familiar with most of the papers which have been published on this subject, and to them may be added some notes published by MR. LLOYD JONES in the *British Medical Journal* for June 21, 1890.

Mr. Jones was led to the study of this substance in some experiments having for the object the sterilization of pancreatic digestion solutions, and, after trying a number of the more prominent germicides, he employed a sample of "salufer." He found at the end of a few days that the digestive solutions to which this substance had been added were some of them absolutely putrid.

The digestions were made in two ways,—either a two per cent. solution of sodium bi-carbonate was taken, and the silico-fluoride subsequently added to saturation, or a known volume of the saturated solution of sodium silico-fluoride was taken, and sufficient sodium carbonate added to produce a two per cent. solution.

In the first case the digestion remained aseptic; in the second there was effervescence as the sodium carbonate was added, and the digestive fluid became offensive at the end of a few days. In the first case the total fluorine was much greater than in the second, existing probably in part as fluoride of sodium, and in part as unaltered silico-fluoride. In the second case the silico-fluoride became converted, on the addition of the sodium bi-carbonate, into the silicate and fluoride of sodium, and so little silico-fluoride remained that it was not sufficient in amount to act as a germicide.

It was suggested by Thomson, who discovered the antiseptic action of the fluoride, that surgeons who placed their knives in solutions of sodium silico-fluoride should add a little carbonate of sodium in order to prevent

corrosion of the steel. Such a procedure appears, in the light of the above facts, to be more than questionable.

With regard to the mode in which the salt acts as an antiseptic, the following facts may prove of interest.

In order to preserve a five per cent. solution of serum albumen in saline solution, an unmeasured quantity of silico-fluoride was added. After a few days the solution was clearer and free from a hazy turbidity previously noticed, but no trace of proteid was detected in the supernatant liquid. This effect Mr. Jones has never been able to reproduce in the same degree, although a saturated solution of the salt slowly and partially precipitates serum albumen, egg albumen, and paraglobulin from their solutions. In fact, a saturated solution proves an exceedingly delicate test for these proteids. With a saturated solution of the salt, albumen was detected in a sample of urine containing casts, which only gave a reaction with trichloracetic acid on mixing, and with picric acid by the contact method, and which gave none on boiling with the addition of a drop of acetic acid, nor with an equal volume of picric acid, nor with acid brine, nor with the cold nitric acid test. The worst objection to its use as a test is that it must be used by the contact method, and that the drug varies a good deal in composition. Some specimens were acid, others neutral, and the majority alkaline.

While the saturated aqueous solution precipitates some proteids, there is yet another effect of the solid salt akin to that of certain other inert powders. M. Boymond pointed out that the filtration of a solution of serum albumen through bismuth trinitrate sufficed to remove the proteid from its solution, and Mr. Jones finds that upon leaving a solution of serum albumen in contact with an underlying layer of fine sulphur a jelly-like layer of proteid separates out and can be seen lying upon the sulphur, while the supernatant fluid is clear. Sodium silico-fluoride appears to act in this twofold manner, and one or both of these properties appear to offer a possible explanation of its antiseptic action, especially as similar precipitants of proteid—as alcohol, mercuric chloride, picric acid, etc.—are generally antiseptics.

With regard to its internal administration, Mr. Jones corroborates the results of those who describe it as not so innocuous as it has been represented. A single dose of 2 grains produced in one case discomfort and nausea. ¼ of a grain thrice daily, exhibited for some weeks, produced, however, no ill-effects.

It appears not unlikely that it may be decomposed within the body in the same way that it is by sodium carbonate, glass, etc., and that after absorption it is as useless as an "internal germicide" in infective disorders as it is in certain cases in the laboratory.

THE PHARMACOLOGY OF THE CAMPHOR GROUP.

The experimental investigations of Heubner, Hoffman, and Wiedmann have yielded a large number of facts as to the physiological action of chloroform. As a result of the studies of these different observers, it has been found that camphor produces at first generalized convulsions, which are, however, only observed in warm-blooded animals, and then paralysis of the terminal extremities of the motor nerves, comparable to the action of curare, and a direct stimulation of the heart, which is observed only in cold-blooded animals.

Camphor likewise produces an increased blood-pressure, attributable to stimulation of the vaso-motor centres of the medulla oblongata. In the *Archiv für Experiment. Pathologie und Pharmak.*, vol. xvii., No. 3, 1890, Dr. Lewin has continued the investigation of the action of camphor on the heart, both in warm-blooded and cold-blooded animals.

He has experimented on the isolated heart of the frog and on dogs and rabbits under the influence of chloral, blood-pressure being reduced to its minimum and the pneumogastric nerves being cut. He has found in dogs and rabbits so prepared for study that the administration of camphor by the stomach or by injection into the veins produces a considerable reduction of blood-pressure, a proof that camphor exercises a direct influence on the heart, which is more durable when the camphor is introduced into the stomach than when it is injected into the veins. On account of the stimulating powers which camphor possesses over the vaso-motor centre, it acts as an antagonist to chloral, and Dr. Lewin has noted when the animal has been subjected to the influence of chloral that when asphyxia was produced by arrest of respiration, there is no elevation of blood-pressure. This result is obtained by the subsequent administration of camphor. Other experiments made with bornylamine $(C_{10}H_1N)_9$

and amidocamphor ($C_{10}H_{19}NH_2O$) have given the following results (*Gazette Médicale de Paris*, June 17, 1890):

In the frog there is motor paresis with fibrillary contraction, but no generalized convulsions, as occurs in warm-blooded animals poisoned by means of camphor. The corneal reflex is very late in disappearing, and then there is noticed a diminution of the excitability of the peripheral nerves and a slowing of cardiac contraction, which is still later in manifesting itself in animals poisoned by amidocamphor. In the final stage of poisoning, paralysis is complete; the animal does not respond to excitation, respiration is arrested, the heart is slowed, but gradually, however, the animal slowly recovers. To obtain these results it is necessary that the dose of amidocamphor ($\frac{1}{8}$ grain) should be larger than that of bornylamine ($\frac{1}{15}$ grain).

In rabbits, the bornylamine, in the dose of 3 grains, injected subcutaneously, produces within half an hour great excitement and violent trembling, the animal cries incessantly, is soon attacked with convulsions, with oscillation, opisthotonos, and clonic contraction of the muscles of mastication. These attacks recur every five or six minutes, and may be excited by the slightest cutaneous stimulation. Symptoms of paralysis then follow, the respiration becomes dyspnœic, and the animal succumbs about half an hour after the first attack.

Amidocamphor injected into the veins of a rabbit, in the dose of 5 grains, does not produce convulsions, but simply progressive paralysis. On the other hand, in the white mouse, ¾ of a grain, injected subcutaneously, produces violent convulsions, which give place to an increasing paralysis, which finally becomes fatal.

It is thus evident that amidocamphor produces convulsive action in warm-blooded animals. Finally, the paralyzing action of bornylamine and amidocamphor, as is also the case with camphor, is exercised directly on the peripheral terminations of the motor nerves, and is thus comparable to that of curare.

This analogy of action between the two bases in question and camphor is also extended to their effects upon the heart, the circulation, and the respiration. Finally, the author states that the results obtained from this study of the pharmacological properties of bornylamine and amidocamphor are sufficient to establish the close relationship between the camphor group and the toxines.

HYDRONAPHTHOL IN THE TREATMENT OF ENTERIC FEVER AND OF DIARRHŒA.

We are now at the height of the season i which severe diarrhœa and other kindred i testinal affections are rife, and we find nea all the medical journals teeming with vario modes of treatment for these affections. W have already given many illustrations of th practice of Continental, English, and Amer can physicians as to this class of disease and in the *Practitioner* for July, 1890, the is a strong paper published by MR. K. Mur CHELL CLARKE as to the treatment of the affections by hydronaphthol. In the trea ment of intestinal catarrhs we should expe that the production of a state of antisepsis i the alimentary canal would cut short the di ease, or, at any rate, mitigate the severity o the symptoms. Even during normal digestio active processes of fermentation take pla in the intestinal contents, by which tox products are formed; as a rule, these are n present in sufficient quantity to irritate th bowel, and the epithelial lining of the g prevents their absorption into the blood. I disorders of digestion, however, these tox fermentation products may be present in e cess, may cause pain by overdistention of th bowel with gas, and set up diarrhœa by e citing excessive peristaltic action and hype secretion. In the case of intestinal catarr from whatever cause it may arise, the ord nary digestive processes are interfered wit giving rise to the formation of abnormal se ondary products of digestion, toxic in the nature, which irritate the intestine, and ke up or intensify the malady. In this way th duration of a catarrh, which may have aris at first from the action for a brief period of simple irritant, and should cease on its r moval, is prolonged, and its consequenc rendered more serious. In such a medi as the intestinal contents—swarming wi countless bacteria—the putrefactive and fe mentative processes which constantly tak place will, on the smallest opportunity, pr ceed to excess. The fever arising in su cases of intestinal catarrh may be attributed self-infection through the absorption into th general circulation of poisonous material fr this source.

The object of producing intestinal antis sis is to check these fermentations, by chargi the medium with some body that renders th development difficult or impossible. To a complish this end satisfactorily in the int tine, we must make use of a substance wh

both antiseptic and also practically insoluble, so that it may pass through the alimentary canal unchanged, and exerts its antiseptic action at every part of it, and at the same time be incapable of absorption into the blood, or if absorbed be harmless.

Betanaphthol has been recommended by a number of authorities in the treatment of the above conditions, and Mr. Clarke states that for some time he has been experimenting with hydronaphthol in intestinal catarrh. Hydronaphthol is prepared from betanaphthol, is less soluble in water, melts at a lower temperature, and its solution gives a deep yellow-brown instead of the green color with the tincture of chloride of iron. Betanaphthol is not poisonous, except in very large doses, but hydronaphthol is said to be absolutely innocuous; like betanaphthol, it has a faint odor of carbolic acid, and leaves a pungent or burning after-taste in the mouth, but both these characteristics are less evident than in the case of betanaphthol.

The disadvantage attending the use of both hydronaphthol and betanaphthol is that they both to a certain extent interfere with digestion, and, in fact, we can only expect that if these bodies check abnormal fermentation, they will also hinder the fermentations that constitute the chief factors in the normal digestive process; so that before again administering either hydro- or betanaphthol it was necessary to find out as far as possible whether they did hinder digestion, and if so, in what manner. To this end Mr. Clarke made the following experiments:

1. In the first, eight ounces of milk was kept at 98° in a water-bath, and the time of development of (1) lactic acid fermentation, (2) formation of curd was noted. The various quantities—two and three grains, and two and three grains repeated every two hours, while the experiment was being carried on—were added to each of four vessels respectively containing eight ounces of milk, and kept at the above temperature. It was ascertained that the time of development of acidity was not affected, but that in all the presence of hydronaphthol delayed curdling for from twelve to twenty-four hours; the delay was about the same in each, in spite of the different amounts of hydronaphthol employed.

2. Two and three grains of hydronaphthol to ten ounces of milk, to which a sufficiency of rennet had been added, did not affect the action of the rennet ferment at all, the milk being fully curdled in one hour, as in a control vessel placed beside the others.

3. One ounce of milk diluted with one ounce of water was then digested with Schacht's liquid pepsin, one drachm of which dissolves one thousand grains egg albumen; this produced partial solution of the milk, with abundant formation of peptones in from two to four hours. To a similar quantity of milk and water, placed under the same conditions, the addition of two grains of hydronaphthol made no appreciable difference; the addition of three grains to another specimen caused slight retardation; the further addition of ten minims dilute hydrochloric acid, and maintenance of the temperature, caused no further changes in the above.

4. On the pancreatic digestion of milk the presence of hydronaphthol or of betanaphthol, which was also tried, did not appear to exert any influence. Four grains of hydronaphthol were added to ten ounces of milk, and four grains betanaphthol to the same amount; pancreatic digestion was then carried out, and the results compared with those from the same quantity of milk digested with pancreatizing fluid alone. Two sets of experiments were carried out; in all the final result was the same, and the naphthol did not appear to interfere with the action of the pancreatizing fluids in any way.

5. Next five hundred grains hard-boiled white of egg were chopped up, suspended in five ounces water, and digested with fifteen minims dilute hydrochloric acid and one drachm liquid pepsin, at a temperature of 120° F.; in two hours the egg albumen was completely dissolved. To another five hundred grains placed under similar conditions four grains hydronaphthol were added, with the result that in two hours the egg albumen was not dissolved, and it was not all dissolved even after six hours.

On the same mixture of white of egg and water the effect of liq. pancreaticus was much more feeble than that of the peptic solution; with the action of liq. pancreaticus, so far as it went, hydronaphthol did not interfere.

6. Lastly, on the conversion of starch by a pancreatizing fluid, hydronaphthol had no effect.

To sum up, the above experiments show hydronaphthol to have a very distinct retarding influence on the digestion of egg albumen by peptic fluids, to have a very slight effect on the digestion of milk by the same, and to have no effect at all on pancreatic digestion of milk or albumen, nor on the conversion of starch into sugar. Milk was chosen as representing all classes of food stuffs, and as being

In concluding, DR. DIEULAFOY called attention to the fact that it was very difficult to state exactly where the lukewarm bath commenced and the cold bath finished. It is very certain that a bath of 89° F. is cold for a patient who has a temperature of 104° F., while, on the other hand, a bath of 78° F., or even as low as 70° F., will naturally be expected to produce more rapid effects than one of a higher temperature, and he believes with Dr. Renoy that if he had been allowed to employ a colder bath, improvement would have been more rapidly attained. He adds that, while the warm or lukewarm bath is calming, the cold bath is really curative, and advises the cold bath in virulent affections.

PHYSIOLOGICAL ACTION OF THE ACTIVE PRINCIPLES OF JEQUIRITY.

Klein has shown that the poisonous properties of the seeds of *Abrus precatorius* (jequirity) cannot be due to a bacillus, and Warden and Waddell ("Non-Bacillar Nature of Abrus Poison," Calcutta, 1884) showed it to be due to the action of a poisonous proteid. The proteids in the seeds are two in number,—a globulin and an albumose,—and the present paper, by S. MARTIN and R. N. WOLFENDEN (*American Journal of Pharmacy*, July, 1890), relates to the physiological action of the first of these. The proteids were obtained by extracting the crushed seeds with fifteen per cent. solution of sodium chloride; they were precipitated from this extract by saturation with ammonium sulphate; the precipitate was redissolved by adding water; and from this solution the globulin was precipitated by dialysis, collected, washed, and dried.

The actions ascribable to this globulin are the production of local œdema and inflammation when subcutaneously injected or applied to the eye, the presence post mortem of petechiæ beneath the serous membranes, and the occurrence of hemorrhagic gastro-enteritis. It also produces a remarkable fall of body temperature after subcutaneous injection, and in lethal doses it causes rapidity of breathing shortly before death. It has little or no effect on blood-pressure. The activity of this globulin is destroyed by heating the solution to 75° or 80°, the temperature at which it enters into the condition of a heat coagulum.

In a second paper (*ibid.*, pp. 100-108) S. Martin describes the toxic action of the *albumose*, which was obtained by precipitating the proteids of the seeds by means of a hol. The precipitate was allowed to re under absolute alcohol for several mon the globulin was thus rendered insolu the albumose, however, was freely solubl water after this treatment. It gave the lowing reactions: The aqueous solution neutral to litmus-paper, and gave no pre tate on boiling. Acetic acid and also n acid gave precipitates which dissolved heating and reappeared on cooling. Co sulphate gave a precipitate soluble in ex of the reagent. Copper sulphate and po gave a "biuret" reaction. Mercuric chlo gave a precipitate insoluble in excess of reagent. The symptoms produced by albumose closely resemble those not when the globulin is hypodermically injec There is gradually increasing weakness, rapid breathing and lowering of body t perature, but no convulsions or paralysis. also causes severe conjunctivitis when app to the eye. Its poisonous properties are sened by heating at 70° to 75°, and comple destroyed at 85°.

The albumose is not, however, so powe a toxic agent as the globulin, the dose ne sary to produce the same effects being lar

A comparison is drawn between the ac of the proteids and those of other poison substances of the same class, especially th in snake-venom.

The following table contrasts the acti of the venom of various snakes and abrus:

Common Adder.—Fatal dose in man, .o gramme per kilogramme of body-we (Fontana).

Australian Tiger-Snake.—Fatal dose dog, .00485 gramme per kilogramme of bo weight.

Cobra.—Fatal dose in dog, .000079 gra per kilogramme of body-weight (Vinc Richards).

Globulin.—Fatal dose, .01 gramme kilogramme of body-weight.

Albumose.—Fatal dose, .06 gramme kilogramme of body-weight.

Peptic Albumoses.—Fatal dose in dog, dose over .3 gramme per kilogramme body-weight (Pollitzer).

ACTION OF ARISTOL IN ULCERATION OF THE SKIN.

It is well known that for some time in G many experiments have been under way a substance called aristol, which is a co

ation of iodine and thymol, and appears in the form of a reddish-yellow powder without the least odor.

In his letter to the *Journal of Cutaneous and Genito-Urinary Diseases* for July, 1890, DR. BROCQ writes that he has recently been trying this substance in his hospital service, and that it appears to possess valuable properties dusted over ulcerated surfaces, and he believes it is destined to replace iodoform with advantage in many cases.

He reports that he has obtained satisfactory results in a case of chancroid as large as a silver ten-cent piece, with undermined edges and perpendicular border, its nature having been verified by experimental auto-inoculation. In four or five days the ulceration was completely modified in aspect and had lost its virulence. He regrets very much that the rarity of chancroids in Paris has not permitted him to multiply this experience, as a single case does not prove much. In tertiary syphilitic ulcerations he states that it appears to increase the cicatrization. Thus, a deep ulcerating gumma of the neck has been completely cured in the space of eight days under the influence of dressings of powdered aristol, and mixed treatment, which consisted in daily frictions with blue ointment, and the administration of four and then of six grammes of the iodide of potassium per day.

Dr. Brocq has used aristol in two cases of epithelioma of the skin deeply ulcerated, the one in a woman of 50, who had already been treated by scraping and by applications of powdered chlorate of potassium. An elongated ulceration with calloused margins had persisted, which, under aristol, cicatrized in fifteen days. The other case is that of a patient the entire upper part of whose cheek and lower lid are eaten out by an epithelioma declared inoperable by the surgeons. Twelve days of application of aristol in powder has much decreased the ulceration, and he is still continuing the treatment. He wishes it to be carefully noted that he does not speak of the curative virtue of aristol in epithelioma, in the same way that he has not spoken of its curative virtue in syphilitic ulcerations, and as he will presently speak of its curative powers in dealing with tuberculous ulcerations.

The author says (and insists upon this point so that he will not be made to say what he does not wish to say) that aristol has in these ulcerations incontestable cicatrizing properties, which have appeared to him even remarkable. Always in the same order of ideas the powder of aristol can be considered as an excellent topical application for ulcers of the leg. Dr. Brocq has tried it in four cases of deep varicose ulcers. In two of these cases, as there were present two large and distinct ulcers upon the leg, he dressed one with powdered iodoform or with powdered subcarbonate of iron, while he treated the other and larger one with powdered aristol. Although these experiments have been restricted, he thinks he can conclude that aristol, combined with absolute repose of the leg, gives, in ordinary cases of varicose ulcer, a rather rapid cicatrix,—that is to say, in about twenty-five to thirty days for an ulceration four to five centimetres wide, by six to seven long, and four to five millimetres deep. In a word, if the patient's general condition be good and the ulceration be not surrounded by dense callous cicatricial tissue of low vitality, the cicatrization advances at the rate of about a centimetre per week under the influence of aristol. The cicatrizing properties are thus seen to be altogether comparable to those of powdered iodoform and to those of subcarbonate of iron. Dr. Brocq believes that in one of his patients they were superior; in another, on the contrary, they seemed less powerful. It is probable that this cicatrizing action is more marked during the first few days of the application and then diminishes, and he therefore thinks there will be a certain advantage in employing successively the aristol, subcarbonate of iron, and iodoform in rebellious ulcerations. Aristol is less irritating than iodoform, and it is thus that in one of his patients, in whom he dressed one ulcer with aristol and the other with iodoform, he was obliged, at the end of six days of treatment, to suspend applications of iodoform, because the skin about the ulcer had become red, tumefied, and eczematous, while around the ulcer which was dressed with aristol the skin was normal. Aristol has also more marked irritating properties than subcarbonate of iron. In the same patient he dressed the ulcer which had been inflamed with iodoform with subcarbonate of iron. At the end of a few days it took on a healthy aspect and tended to cicatrize without the least surrounding inflammatory reaction. About the fifteenth day of treatment, on the contrary, there was produced all about the wound dressed with aristol a slight redness and a little discharge. The aristol gave no result in one case of ulcer of the leg situated in the midst of callous fri-

able tissue, without the least vitality. It is true, however, that no other treatment had succeeded. One of the affections against which aristol seems to have the most power is local tuberculosis of the ulcerating variety. He has treated for a long time an ulcerating lupus of the elephantine variety upon the foot, using cauterizations with lactic acid, dressings with camphorated naphthol and iodoform.

In fifteen days after aristol was first used, cicatrization of the ulcerations took place. Another tuberculous ulceration, developed on a scrofulo-tuberculous ulceration, closed under this dressing in twelve days. On the other hand, salves of aristol have not yet appeared to give marked curative effects in cases of superficial non-ulcerating lupus, and in cases of lupus erythematosus. Experiments in this respect are still being carried out by the writer.

Dr. Brocq, in conclusion, says, "In a word, without wishing to unduly praise the therapeutic properties of a substance which I have just begun to employ, and reserving the privilege of modifying these opinions after a more extended trial, I believe that aristol may render very real service in ulcerations of the skin. It has no odor, and in this respect seems to me superior to iodoform; on the other hand, it does not soil as much as the subcarbonate of iron."

INDICATIONS FOR THE USE OF GLYCERIN INJECTIONS AND SUPPOSITORIES.

The observation of the effects of glycerin injections and suppositories in a large number of patients has led Dr. Polubinski (*Deutsche Medizinal-Zeitung*, June 19, 1890) to the following conclusions:

There is no doubt that glycerin irritates the mucous membrane of the rectum. This is shown both subjectively in the burning produced by it, and objectively by the ascending of the mercurial column of the thermometer, if pushed deep enough within the intestine.

The increase of temperature and the desire to defecate are of but short duration, and the latter may often be overcome voluntarily by the patient. The irritation of the mucous membrane produces no local secretion, since the fæces, evacuated as a consequence of injections of glycerin, are only covered with glycerin. The author obtained the best results when the rectum and sigmoid flexure are filled with scybala. If fæces collect in the upper parts of the intestinal tract, glycerin is then inefficacious. According to the author, therefore, the cases in which glycerin enemata and suppositories are indicated are,—*first*, when the fæcal masses are already in the rectum; *second*, when they are in the parts of the large intestine immediately above, as occurs so often in lying-in women; *third*, in diseases or physiological conditions which produce mechanical pressure on the rectum or sigmoid flexure, such, for example, as new formations in the pelvis, pregnancy, etc.; *fourth*, in scrofulous children; *fifth*, in persons who, although they may daily succeed in having evacuations of the bowels, yet in whom the act of defecation is only accomplished with difficulty and accompanied by pain, and in whom in general the fæces are of excessive density.

THE ACTION OF HOT AND DRY AIR ON THE TEMPERATURE OF THE LUNG.

Some experiments made by Dr. Sehrwald as to the influence of inhalations of warm and of dry air on the temperature of the lung have led him to the following conclusions (*Bulletin Général de Thérapeutique*, July 3, 1890):

Dry air at a temperature of 662° F. (?), inspired by the nose, only raised the temperature of the lungs about 1½°, even though the inhalation was practised without interruption for an hour and a half.

2. An equal increase of temperature may be produced by the simple inhalation of ordinary atmospheric air at the ordinary temperature, provided respiration be more vigorously performed.

3. In the inhalation of hot air by the nose, respiration is accelerated, and becomes very vigorous, so that, therefore, elevation of the temperature of the lung may be attributed to this increased functional activity of the lungs.

4. The mucous membrane of the trachea is much more sensitive to hot air and dry air than that of the mouth and nose.

5. When the air is allowed to penetrate directly into the trachea tolerance ceases when the temperature of the dry hot air rises above 176° F.

6. As a consequence of the direct penetration into the trachea of air of 176° F., respiration becomes accelerated to 144 in a minute or more.

7. During this time the temperature of the

ing does not rise more than a little above ° F.

3. The opinion of Halter, that the bacilli of uberculosis are destroyed after subjection for hort intervals to air at a temperature of 105°, as never been demonstrated. The above is confirmatory of a large number of other tes- imony which we have published on the same ubject, and together should do away with the mployment of hot air in the treatment of uberculosis.

THE ACTION OF SUGARS ON THE ORGANISM.

We have on a number of occasions called ttention to various papers which have been ublished as to the diuretic action of sugar, nd an article by DR. ALBERTONI, discussed by Dr. Louise G. Rabimovitch in the *New York Medical Journal*, July 5, 1890, is, there- fore, a timely one. Dr. Albertoni considers the question of the absorption of sugars which are injected in considerable quantities as food to be important; it concerns, he thinks, both physiology and pathology, as far as it relates to the pathogenesis of di- abetes.

With reference to the absorption of glucose, the works of Funke, Von Becker, R. Meade Smith, Anrep, and Tappeiner are mentioned, with the objection, however, that the animals experimented upon by these authors were under special or artificial conditions, and that in general their works show only that glucose is absorbed in the gastro-intestinal tract, without specifying the quantity and limits of absorption, especially in the normal state of the system.

On the ground of his experiments, M. Al- bertoni thinks it is incorrect to admit that the absorption is regulated by the physical laws of density of liquids. The object of his work is to determine the rapidity and inten- sity of absorption of glucose solutions of dif- ferent degrees of concentration introduced into the gastro-intestinal tract under normal conditions.

The author experimented on dogs which were deprived of food for twenty-four hours. The amount of sugar in the solution ingested or injected, and the time that it remained in the gastro-intestinal tract, having been known, he was enabled to judge of the amount of sugars absorbed for a given time by collect- ing the remaining liquids in the same tract after sacrificing the animal and testing the liquid, previously purified, by means of dif- ferent chemical methods.

An elaborate table of experiments is given, and the author concludes that the rapidity and intensity of the absorption of glucose are considerably greater than they have been supposed to be. According to the table, the absorption of glucose in an hour amounts to from sixty to sixty-five grammes, and during the subsequent hours the quantity absorbed diminishes; the explanation of this is, as al- leged, that, the organism being saturated with glucose to a given point, its absorbing prop- erty for the glucose diminishes.

The statement as regards absorption is true of glucose solutions of less as well as of greater density than that of the blood, the fact being more conspicuous, however, in the former case. The sugar solution remaining in the stomach unabsorbed diminishes al- ways in density, which may become inferior to that of the blood, but is superior to that of the plasma.

The glucose disappears from the stomach independently of the quantity of water in which it is dissolved, and disappears in greater quantity than the water that holds it in solution, without respect to whether the solution is of less or greater density than the water.

It is probable, Professor Albertoni thinks, that the absorption is accomplished in the stomach itself; it always contains the un- absorbed mass of liquid. He seeks con- firmation of the statement in one of the ex- periments in which the vagi were cut through; because of the induced pyloric insufficiency, the intestine contained much more liquid and glucose than in any other experiment.

The effect of sugars on the circulation is under consideration in the second part of the work, and this is stated to be the first work on the subject.

a. Action on the Blood-Pressure.—The au- thor published his first work concerning the question some years ago, in which he en- deavored to show that saccharose and glu- cose injected into the blood in moderate doses augmented the blood-pressure, and that this was manifested instantly, lasting as long as the blood contained an excess of sugar. The degree of augmentation of blood-pressure is not in relation with the quantity injected, but its duration is, for the organism needs a longer time to eliminate the excess of sugar.

It is known now, the author alleges, that maltose is formed at the same time with the

glucose, and, having used pure maltose in his experiments, he found this substance to act like glucose and saccharose.

The results of the experiments are given in a table which shows the decided augmentation of blood-pressure, the mechanism of which is explained as follows:

1. The augmentation of blood-pressure is brought about neither by the influence of the vaso-motor centres nor by the action on the capillaries themselves; the vessels dilate relatively after injection of glucose, and the blood-pressure augments whether a section is made of the cord beneath the calamus or of the cord and the vagi.

2. The augmentation of pressure is not dependent upon paralysis of the vagi, since it remains the same after section of these nerves, and, in case of the pressure being augmented by glucose injections, the pressure increases progressively after the section of the nerves.

The heart is the organ that shares in this augmentation of blood-pressure; the increased frequency of the heart-beats is not the essential factor necessary to accomplish this, for in dogs whose vagi are cut the pressure increases after injection of glucose without the pulse becoming more frequent. It is the increased systolic excursion that maintains the elevation of pressure. This fact was evident from experiments on frogs whose heart-beats were obtained by Marey's apparatus. A few drops of a one per cent. glucose solution were poured on the cardiac muscle, and the elevation of blood-pressure was most conspicuous. The reasoning does not hold good if the increased pressure is explained by the presence of an additional amount of liquid in the shape of the solution in the blood; for, firstly, the added mass, from four to eight grammes, which suffices to augment considerably the pressure, is too small to be looked upon as a cause of augmentation; secondly, the coexisting vascular dilatation would compensate sufficiently for the additional liquid mass.

The supposition that the phenomenon might be due to the fever induced by the injection into the blood is to be excluded with certainty, for the effects are instantaneous and last as long as there is an excess of sugar in the blood.

b. The Action on the Frequency of the Pulse.—This augments with the blood-pressure, the ratio being 20 to 40 pulsations a minute, according to what animal is used after an injection of from 15 to 30 grammes of glucose, maltose, or saccharose. It lasts until the excess of sugar is eliminated from the blood. The augmentation in the frequency of the pulse is not met with in either rabbits or dogs when cervical vagi are cut.

The author experimented on human subjects, administering sugar by the mouth; he concludes that a slight augmentation in the frequency of the pulse is noticed, which is manifested more or less quickly, according to different accidental and secondary circumstances. In cases where there was nausea the pulse failed to become more frequent.

The foods, the author concludes, containing starches and sugar have certainly an analogous action on the organism, and this explains certain physiological phenomena subsequent to meals.

c. Action on the Blood-Vessels and the Velocity of the Circulation.—The action of glucose on the vessels is determined by observing the change in volume of the organs, and the quantity of blood flowing out from an opened vessel in a unit of time.

That sugar dilates the blood-vessels was inferred from the augmentation of the limb in volume; this was verified by means of Roy's apparatus, and the quantity of blood shed from a given vessel in a unit of time was double the normal. The rapidity of the circulation was decidedly increased.

d. The Influence of Sugars on the Urinary Secretion.—A number of authors, it is said, are of the opinion that in diabetes the extraordinary increase of the amount of urine is dependent upon the elimination of sugar; special researches on the subject have been made only recently by Richet, Moutard-Martin, and the author himself. According to Richet and Moutard-Martin, a small amount of sugar in the blood—.50 gramme to the animal's kilogramme of weight—is sufficient to induce a noticeable polyuria. It is not to be attributed to the water absorbed with the solution, for ten times the volume of pure water injected will not produce the same effect.

The author professes to have investigated the question before the authors named (*Giornal. di Quest. Acc.*, v. v., .xxix. p. 178), and to have endeavored to point out that the duration and intensity of the induced polyuria varied according to the quantity of sugar injected. The polyuria and glycosuria are not dependent upon spinal irritation, which might give similar results; the same phenomena are observed in dogs with the spinal cord divided below the calamus.

Neither is the fact to be attributed to the increased blood-pressure, for the same is the case in rabbits, which present no modification of blood-pressure.

The dilatation of the renal vessels and the increased rapidity of the circulation determined by the glucose are said to account partly for the polyuria. Besides the indications of these facts by the angeiometer, there is some special effect of the sugar on the uriniferous tubules.

Munk is quoted as having shown on an isolated kidney that the addition of a half per cent. of sugar to the blood led to the production of eight times the normal amount of urine.

Maltose is assimilated in the same proportion as glucose; this is in accordance with the results of Dastre and Bourquelot.

Morphine and chloral interfere with the effects of sugar on the circulation, and have but little influence on the polyuria and glycosuria. Since these drugs are used in diabetes, their effect was tested by administering them before injecting the sugar in small doses. They seemed to check the polyuria and glycosuria to some degree, but this was not the case when large doses of sugar were given.

The experiments show that sugars are not only foods, but at the same time agents modifying the functional actions of the organism. Sugars entering the blood after meals affect the circulation in a way opposite to the enfeebling action of some albuminoid derivatives of peptones that can be formed in the process of digestion (the peptin of Albertoni, the peptonin of Brieger).

Cohnheim is quoted as saying that the accumulation of sugar in the blood is the centre of all the phenomena of diabetes, and it is presumed that the same phenomena may be induced artificially by injecting sugar into the blood. The quantitative modifications of the urinary secretion and the changes in the circulatory apparatus are equally produced and are transitory in diabetic patients.

It remains to decide, the author remarks, what the reasons are for the accumulation of glucose in the blood of diabetic patients.

TREATMENT OF BUBO.

According to Dr. Cordier, of Lyon, the procedure which has given him the best results in the treatment of bubo is as follows: As soon as the œdema of the skin shows the presence of pus, he makes a puncture with a straight bistoury. There is discharged along with the blood some streaks of pus. No pressure is made, but the cavity is injected with about a cubic centimetre of a 1 to 50 solution of nitrate of silver. Without paying any attention to whether the solution flows out again or not, a dressing is made with iodoform and a spica bandage. When this slight operation is made early enough, no purulent discharge follows, and the bubo disappears rapidly in leaving behind a sort of indurated nodule. When the puncture is done in a bubo much more advanced and in full suppuration, the purulent collection must be carefully washed out. A first injection of the solution mentioned is made, which is destined to cleanse the parts, and the second injection is left in; a decided inflammatory reaction is established, and quite an abundant suppuration occurs, and lasts for three or four days, and then becomes serous. Healing takes place rapidly, and the opening closes without leaving a cicatrix. Dr. Cordier has had the same results, whether the bubo was chancrous or simply inflammatory. *Journal of Cutaneous and Genito-Urinary Diseases*, July, 1890.

THE TREATMENT OF PNEUMONIA BY COLD BATHS.

The treatment of pneumonia by cold baths is by no means a novel idea, since we can find records of this mode of treatment in the seventeenth and eighteenth centuries. Nevertheless, this treatment of pneumonia has not been adopted with any degree of uniformity, although the works of Wunderlich and the application of Brand's method show that the abstraction of heat from the body by cold water may be of great service in a large number of diseases. In France and in this country cold baths have been almost restricted to the treatment of infectious fevers. In pneumonia it is natural that early attempts at the employment of this mode of treatment should have been attended with a good deal of hesitation, and in 1880 Hanot published a monograph, in which he claimed that it was both useless and dangerous; today, however, we are beginning to appreciate the value of the employment of cold baths in febrile and pulmonary affections, and at the meeting of the Société des Hôpitaux, held June 25, 1890 (*La Médecine Moderne*, July 3, 1890), Dr. Barth stated that

two years ago he had under his care a young woman, 33 years of age, attacked with pneumonia of the right apex, with symptoms of cardiac asthenia, and in whom the temperature rose in forty-eight hours to 106.5° F. In the face of this hyperpyrexia, Dr. Barth had recourse to cold baths, and he states that the effect was marvellous. Encouraged by this result, he writes that he has not hesitated to employ this method of treatment in all cases of pneumonia or hyperpyrexia; but naturally this mode of treatment is not indicated in cachectic individuals, in benign cases, or where organic lesions are present which would counter-indicate their employment. In these cases he states that he feels confident that he has saved life by the employment of cold baths.

In pneumonia the initial intra-pulmonary fluxion favors the reproduction of the micro-organisms, and the exudation soon becomes an obstacle to respiration, and thus interferes with oxidation of the blood, but during this time the organism is consumed by an intense fever, which demands an increased aëration of the blood, for the blood becomes charged with products of disorganizations which cannot be eliminated, and in time the whole is infected by micro-organisms, which may produce local results of a most serious character. The effect of cold baths is not only due to the subtraction of heat, for the momentary refrigeration is really itself but a single and by no means the most valuable result. Cold at first contracts the peripheral blood-vessels, augments blood tension, and, as a consequence, the work of the heart is increased, then reaction calls the blood to the periphery, and there is at the same time energetic stimulation of the nervous system in all its parts; while, finally, and most important of all, the secretions, and especially the renal secretions, are augmented; the importance of this in infectious diseases cannot be overestimated. Through this follows stimulation of the heart and nervous system and augmentation of secretion.

These actions are favorable, provided the organism be brought into a condition to react, but if the heart is altered in its substance, syncope may occur. If the peripheral blood-vessels are diseased, rupture may take place if the nervous system is profoundly affected, and fatal collapse may occur.

It is thus necessary to determine before giving cold baths whether the organs of the body are in a condition to support their action. Further, the temperature of the bath must be adapted to the age and the state of the patient, and Dr. Barth maintains that it is advisable to commence with lukewarm baths, and then gradually decrease the temperature of the water until it reaches 6[illegible] while stimulating injections of caffeine and the administration of spirits should be resorted to.

ETHER AS A MENSTRUUM IN MEDICATION BY THE SKIN.

Authorities have been divided as to how far, if at all, the local and remote effects of remedies applied to the human body in morbid states can be produced through the cutaneous surface. No practitioner of medicine is likely to doubt, however, that the human body, in many of its organs and tissues, can be readily brought under the direct and distant influences of mercury by the cutaneous inunction of mercurial ointment. It is easy to question the efficacy of remedies exhibited by the skin when the effects which they produce are less objective in their demonstration than those of mercury. We may recall that the capacity of the skin to absorb medicinal substances from their aqueous solution in baths was accepted in the medicine of the ancients, whose therapeutic uses of medicated baths we are now learning, *lege intervallo*, to imitate. The question has been discussed frequently since the close of the last century. At that time Abernethy and Falkner concluded, from a series of experiments, that the absorption of some remedies through the skin did take place under certain conditions; and, while some other observers were led to qualify or to contradict these inductions, affirmative conclusions upon the subject were fully supported by Braconnot, Chevallier and Petit, and other investigators. Some striking instances of efficient percutaneous medication are well known to us. For example, ointment of aconitine rubbed upon the skin of the face produces anæsthesia of the subjacent sensory nerves, "so that a razor passed over the part in the act of shaving is not felt." We are accustomed in medical practice to present remedies to the skin with the view of producing remote as well as local effects, in the various forms of the officinal emplastra, of the officinal liniments (alcohol, oleaginous, and saponaceous) and of fatty unguents. Of these separate forms of medicaments in enepidermic use the ointments and the oily liniments are probably the most active, because of the

admixture with the fatty sebaceous secretion of the skin. A "true plaster" is held to have for its basis litharge in union with oleic, margaric, and stearic acids, and eleven officinal plasters are so composed. The other plasters, which are not strictly plasters, derive their body from the chemical action of their ingredients, as in emplastrum ammoniaci cum hydrargyrum, or from wax, lard, pitch, olibanum, suet, resin, soap, and some fixed oils, in various combinations. Neither a plaster so formed nor a solution in alcohol of the active principles of drugs is a scientific medicament for enepidermic employment and percutaneous action, if we have regard to the structure and physiology of the human skin.

It will be found, however, that there are in practice three separate obstacles to the absorption of a medicine through the skin,—namely, the epidermis, the sebaceous secretion of the skin, and the relative insolubility of the drug which is employed in any particular case. After a number of experiments it occurred to SIR JAMES SAWYER (*Lancet*, July 12, 1890) that ether would be the best menstruum at our disposal for the solution of many remedies designed for enepidermic application, and he concluded that ethereal liniments would be more active through the skin, and certainly stand upon a better scientific basis than plasters, than any of the officinal liniments, or even than fatty unguents. Ether presents several advantages over other bases and menstrua for remedies applied to the skin. It has great endosmotic capacity; it probably possesses in a high degree what has been called "diffusion power;" it is a solvent of high potency for many active drugs, or, more precisely, for the active principles of many such drugs; and it also is a ready solvent of the fatty constituents of the sebaceous secretion of the skin. When we use ether as a dissolvent for an active drug which we apply to the skin, we apply our remedy in solution in a menstruum which is a perfect solvent for the obstructing fatty sebaceous secretion of the cutaneous surface; we employ a menstruum which, by its solution of the fatty secretion, permits the most intimate application of the remedy to the bare epidermal surface.

In the early part of this year Sir James Sawyer published a brief account of an ethereal tincture of capsicum, which he has been using largely in practice, and which he has found to be a very active rubefacient and an efficient remedy in several painful maladies. He now recommends ether as a solvent vehicle for some other remedies which may be applied to the skin. After examining a large number of drugs, he has selected iodine, belladonna, and menthol, besides capsicum, as suitable for external therapeutic employment in the form of ethereal tinctures. It appears that the ethereal tincture of belladonna should be made from belladonna-root, with camphor, of the same strength as the belladonna liniment of the Pharmacopœia, using the officinal pure ether in its preparation instead of rectified spirit of wine. The result is a bright tincture of a brilliant "apple-green" color. The author thinks this tincture will be found useful as a paint for the skin in cardiac and other cases in which belladonna plasters or liniments would otherwise be employed. He uses belladonna-root instead of belladonna-leaves because it gives a preparation which does not color the surface of the skin as one made from the leaves does. The author prefers the tincture of iodine to be of the same strength as the officinal tincture of iodine. To form an ethereal tincture of menthol he has fixed upon a solution of menthol in pure ether, of the strength of one drachm of menthol in a fluidounce of the solution. For the application of ethereal tincture of menthol he has found it best to use a brush of glass. When the meshes of the brush become clogged with menthol, by the evaporation of the ether of the preparation, they can be freed in a moment by dipping the brush into the tincture. The writer claims that this preparation can be readily applied as a paint to the skin, and that it is an efficient means of using menthol for its local therapeutic effects, especially for the removal of superficial neuralgic pains. It should be lightly painted over the painful part. The quick evaporation of the ether gives a grateful sense of coolness, which supplements the analgesic action of the menthol, and allows the easy application of a succession of coats, which leave pure menthol in a finely-divided condition upon the skin.

LACTIC ACID IN THE TREATMENT OF DIARRHŒA.

We have already referred to the recommendation of DR. HAYEM as to the utility of lactic acid in the treatment of the green diarrhœa of children and of the different forms of diarrhœa in adults, and at the Société Médicale des Hôpitaux, held June 25, 1890 (*La Méd. Moderne*, July 3, 1890), he stated that he had continued testing the value of this remedy in

these affections, and up to the present time he had always met with success in its employment in the diarrhœa of adults. It is strange that, in view of the remarkable success which it appears to have obtained, lactic acid is scarcely mentioned for this purpose in the most recent works on therapeutics, although it has acquired considerable repute in the local treatment of tuberculous lesions.

This acid belongs to the fatty series, is formed in the stomach and intestinal canal, although when hydrochloric acid is present in large amount it almost entirely disappears. There seems to be little doubt that lactic acid may be concerned in gastric digestion, and has some value as a remedy in dyspepsia and as a preventive of fermentation, although to a less degree than hydrochloric acid. Lactic acid is absorbed in the stomach in the form of lactates, which become changed in the blood, forming alkaline carbonates, which are then excreted by the kidneys, and give an alkaline reaction to the urine. If, however, it is given in large amounts (50 grains or more), it passes through the kidneys unchanged. It would thus seem probable that in employing sufficiently large doses it could arrive unchanged in the intestine, and there exercise direct effects, whether of a germicidal nature or of a topical character.

It has been claimed that lactic acid in large doses removes alkalies from the organism, and thus produces various disturbances, such as vomiting, diarrhœa, and loss of flesh. Hayem, indeed, believes that osteomalacia and rachitis are due to the decalcification of the blood by lactic acid; but Heiss has been able to administer immense amounts to a dog without producing any disturbance during life or any discoverable lesion post mortem. Dr. Hayem prescribes lactic acid, in the dose of 150 to 200 grains, in the form of a lemonade sweetened with syrup and dissolved in large quantities of water. In a certain number of cases Dr. Hayem restricted all alimentation to kéfir, and he states that in the last two years he has been administering this, together with lactic acid, to his phthisical patients affected with dyspeptic troubles, and he has found their diarrhœa is by these measures readily suppressed. Lactic acid seems to succeed less well in entero-colitis than in other intestinal affections, a fact which proves that it only reaches the large intestine in a diluted condition. The author has found, however, that it is especially successful in the diarrhœa of typhoid fever. In many cases of chronic diarrhœa an examination of the gastric contents will discover that the diarrhœa is caused by defects in the gastric digestion largely attributable to a deficiency of acid. Here especially lactic acid may be expected to succeed. Also in cholera morbus and epidemic cholera, Dr. Hayem states that this remedy is an effective one; for the latter purpose he recommends the administration of 115 to 160 grains daily, while, as a means of treatment, he states that he would not hesitate to administer 120 to 300 grains in twenty-four hours.

RESEARCHES ON A NEW METHOD OF ASCERTAINING THE DIGESTIVE POWER OF THE GASTRIC JUICE WITHOUT USING THE SOUND.

Marfan has investigated a number of cases with a view to testing the reliability of Günzburg's procedure (*Medical Chronicle*, July 1890). This consists in administering three or four grains of iodide of potassium enclosed in a fragment of thin india-rubber tubing, the ends of which are fastened down and tied with three threads of fibrin which has been made flexible by preservation in alcohol. The threads are carefully and equally tied. The packets thus made up are preserved in glycerin, and when about to be used are dried with filter-paper or absolute alcohol and put in a gelatin capsule. A test-meal, such as that recommended by Ewald, consisting of a roll of white bread and about ten ounces of water, is given, and, after the lapse of an hour, the capsule is swallowed. The author employed a test-meal consisting of an egg, about three ounces of bread, and a glass of water. If the digestive power of the juice be normal, the threads of fibrin are quickly dissolved, the iodide of potassium is set free in the stomach, absorbed under normal conditions, and tested for at intervals of five minutes to a quarter of an hour in the saliva or urine. The iodide is detected by adding to the saliva a few drops of a solution of starch and fuming nitric acid. The iodine is liberated by the acid, and gives at first a red and afterwards a blue color with the starch solution. For practical purposes Marfan has found it only necessary to test the saliva every quarter of an hour. The patient spits into suitable vessels, which are labelled with the time, and can be tested at the daily visit.

The capsule is taken into the stomach at a time when the HCl ought to be [illegible]

the gelatin is dissolved in all cases, whatever the state of the secretion, nearly in the same time, but the solution of the fibrin of course depends on the activity of the gastric juice. Normally it takes an hour. When it is complete the iodide is set free, dissolved, absorbed, and eliminated by the saliva in the healthy subject in a quarter of an hour more, and at the end of that time can be detected in the manner stated. In hyperacidity Günzburg found the reaction in three-quarters of an hour, in patients having a normal acidity in an hour and a quarter, in those with lessened acidity in from an hour and three-quarters to as late as four and five hours after ingestion. Marfan, after testing a number of cases by the usual methods and then using the capsules, obtained the following results: Where three per mille of HCl or more was present, the reaction was obtained in three-quarters of an hour; with 2.5 per mille, in one hour; two per mille, an hour and a quarter; 1.5, an hour and three-quarters; with less than one per mille, two hours and more. In this way sixty cases were tested, among them being eighteen cases of phthisis. The results obtained in this disease were one slight increase of HCl, two normal, fifteen insufficiency. The remaining cases present nothing worthy of remark.

THERAPEUTIC EFFECTS OF HEAT ON SYPHILIS.

Dr. K. A. P. Y. Kalashnikoff has made a series of observations on the therapeutic effects of heat on syphilis, and especially on syphilitic eruptions, his patients being inmates of a St. Petersburg lock hospital for women and children. The heat was applied where possible by means of partial hot-air baths administered to the affected part for half an hour twice a day, the part being enveloped in hot flannel immediately afterwards, and remaining so protected until the next hot-air bath. The temperature never exceeded 116° F. Where the eruption was on the back or neck, or on some part which it was impossible to insert in a hot-air chamber, india-rubber hot-water bottles, or tubes through which hot water was kept flowing, were employed. When both arms or legs were affected in a symmetrical manner the treatment was confined to one side, the other being left untreated for the purpose of comparison. The results showed that, generally speaking, the heat treatment acted very energetically and beneficially on syphilides, both when employed alone, instead of mercurials and iodides, and also when used in conjunction with these remedies. Often heat proved beneficial when the ordinary specifics had failed. Among other observations it was noted that hard chancres healed and the induration disappeared in from eight to sixteen days; roseola and papular erythema disappeared in from four to eight days; various forms of papular and impetiginous syphilides, with marked pigmentation, disappeared in from eight to twenty-one days; non-ulcerated tubercles and gummata disappeared in from seven to twenty-four days, but those which had already begun to ulcerate required from one to six weeks; periostitis was cured in from ten to twenty-four days; ostoses were not affected; syphilitic ulcers, consequent on the breaking down of gummatous periostitis, required treatment of from six weeks to three months or more; and necrosis of bone frequently required many months' treatment before the sequestra could be got away.—*Journal of Cutaneous and Genito-Urinary Diseases*, July, 1890.

ARISTOL.

Although aristol has been in the hands of the profession such a comparatively short time, an extensive series of publications of experience of its use has appeared, which, for the most part, quite confirms the very favorable results recorded by Eichhoff of its use. Dr. Brocq reports a remarkable case which he presented to the Société Médicale des Hôpitaux,—a patient suffering from extensive superficial epithelioma of the face, extending from the level of the mouth to the orbit, the lower eyelid being completely destroyed. The healing action in this case was at once evident, and in five or six days the wound was becoming covered with a firm cicatrix, and at the time the patient was presented to the Society, after use of the remedy for three weeks, only very small wounds remained. Dr. Brocq has also had most gratifying results in other cases in which he has used the drug, especially ulcers of the legs and ulcerated gummata.

Dr. Gaudin reports cases of psoriasis, ulcers, eczema, and chancre, in which he has used the drug with most excellent results; in one case of ulcer of the leg, in which he made comparative experiments with iodoform and hydrarg. biniod., the result with

aristol far exceeded that with the other drugs. In all his cases the marked property of the drug in favoring cicatrization was most striking. Dr. Gaudin applied the drug either dissolved in ether or collodion, or as a dusting powder.

Dr. Hughes has found the drug of much service in all those forms of rhinitis associated with a dryness of the mucous surface, or in which there is a tendency for the secretion to undergo decomposition. He reports twenty-one cases in which he has tried the remedy, and in all the result was most satisfactory; in two cases of specific ozæna the disappearance of the fetor and the healing was very rapid.

Dr. Löwenstein has treated four cases of ozæna with the drug, and reports most favorably on its effect in one case of specific ozæna. In addition to insufflation of the drug in powder, he painted the ulcerated parts with a solution in collodion flexile. He speaks very favorably of the property the drug has of forming a covering over the diseased surface.

Professor Neisser has made experiments on the action of aristol on bacteria, and also used it therapeutically in thirteen cases of lupus exulcerans, in which he found it of great service. In lichen rubra, soft chancre, and gonorrhœa the results were not satisfactory.

Dr. Schirren has treated ten cases of psoriasis of various forms, vulgaris, guttata nummularis, with aristol, and reports all the cases as cured after, at longest, twelve days' treatment. He applied the drug as ten per cent. ointment in lanolin or vaseline, or with zinc starch. In none of the cases was any ill by-effect observed.

Dr. Schuster records a case of syphilis of the naso-pharynx, in which he had a very good result, after the use of aristol in powder. The case had been under treatment for some months without any benefit, potassium iodide being administered internally and mercury by inunction. Dr. Schuster reports also a case of psoriasis in which he used aristol with very rapid and good results. He applied a ten per cent. solution of the drug in collodion flexile.

Dr. Seifert has made an extended trial of the new drug in the syphilis clinic at Würzburg, and reports very favorably on its use. He has used it in ulcers of the leg, lupus, psoriasis, moist condylomata, and suppurating gummata, and in all cases in which it was applied the good result was most marked. Dr. Seifert states that he did not find any iodine in the urine when aristol was administered internally.

Dr. Von Swiecicki has made a trial of the drug in gynæcological practice. He has used aristol in twenty cases, and in all the drug has had a beneficial action. The cases reported comprise endometritis, hyperplasia of the cervix, parametritis, eczema vulvæ, and after operation for fissure of the cervix, applied as a dusting powder.—*Medical Chronicle*, July, 1890.

INTESTINAL CALCULUS FROM ABUSE OF VICHY WATER.

Dr. Loviot described, before the Paris Obstetrical and Gynæcological Society last autumn, a case where he discovered a scybalous mass in the pelvis of a woman, aged 3[illegible], who had been under his observation for over nine years. She suffered severely from constipation, and within five years spent two hundred and fifty francs in the purchase of Vichy water powder. Besides drinking the powder in solution daily she also took tamar, and administered to herself enemata. Defecation became very painful, leaving the sensation—not an illusion in her case—of a ball pressing on the perineum. Dr. Loviot succeeded in partially breaking down the mass by means of a blunt curette; then it was easily extracted through the anus without any laceration of the sphincter. The mass was as big as a small orange and very hard. The outer part consisted of dry fæcal matter, infiltrated with salts. In the interior was a white calculous mass of salts. M. A. Guérin, in discussing Dr. Loviot's case, spoke of another where severe diarrhœa was caused by the scybalous body. The mass itself was so hard that it had to be broken up by placing against it the end of an iron gouge, the handle of which was carefully struck by a mallet. With care the fragments were extracted without wounding the bowel or the anus. The diarrhœa immediately ceased.—*British Medical Journal*, June 21, 1890.

THE TREATMENT OF CYSTITIS IN WOMEN.

In gynæcological practice few diseases are more frequently before us, or are more intractable in their treatment by the routine methods usually recommended in text-books, than cystitis. This complaint, moreover, often occasions, as Dr. Emmet has well ob-

erved, an intensity of suffering hardly exceeded by any infirmity to which women are subject. A paper published by DR. THOMAS MORE MADDEN in the *Medical Press and Circular* for July 2, 1890, is therefore worthy of attention, especially since he claims that with one exception every one of the cases of this affection admitted into his wards were discharged free from the disease, although in some of these the disease had resisted years of previous treatment. In women cystitis is not only more frequent in its occurrence, from the greater number of the causes incidental to their sex just referred to, but is also more urgent in its symptoms, and liable to lead to graver pathological consequences than is the case with the same disease in men.

Cystitis is frequently met with either as a complication or a consequence of vulvar or vaginal inflammatory conditions,—*i.e.*, vulvitis or vaginitis,—more especially when of gonorrhœal origin. It may also be due to mechanical causes, uterine flexions and displacement, or fibro-myomata, or may be occasioned by the protracted pressure of the fœtal head in cases of difficult labor; occasionally it results from renal disease, or from the irritation of gravel or calculi, as well from cold, local injuries, or from reflex irritation, and still more frequently it arises merely from long delay in complying with the call to micturition.

The symptoms are pretty much the same in both cases,—constant, tearing suprapubic pain, extending through the pelvis, and giving rise to tenesmus, as well as almost constant desire night and day to pass water, with little or no relief; on each occasion micturition being attended with increased pain, straining, and inability to void the last drop of water. On examination of women with cystitis, the urethral orifice and canal were found patulous, the mucous membrane protruding in a state of hypertrophic ectropism through the gaping meatus, the lining membrane of the bladder was in a similarly diseased condition, and the organ itself so contracted and irritable that scarcely an ounce of bland fluid could be injected, and was immediately expelled with spasmodic force.

As regards the general treatment in the first place, it is obvious that in this, as in every other disease, the first point is to ascertain and remove, if it be removable, whatever may be the cause of the excited condition of the bladder. Thus, if this be dependent upon extension of vulval or vaginal inflammation, gonorrhœal or non-specific, this must, in the first place, be allayed by appropriate treatment. If the cystitis be due to mechanical pressure of a displaced uterus, this must be rectified by a suitable pessary; in the same way a uterine fibroid pressing on the bladder, if it cannot be otherwise got rid of, must at least be pushed well above the pelvic brim. If a stone exist in the bladder, or if renal disease had extended from the kidneys down the ureters, the resulting cystitis cannot be subdued until the exciting cause in either case be removed.

The majority of the remedial measures recommended, Dr. Madden regards as merely palliative, such as long-continued hip-baths, washing out the bladder with plain warm water with a double catheter, or else with flaxseed tea, or a solution of boro-glyceride concurrently in all cases, with absolute rest in bed, free use of diluents, and the internal use of the old-fashioned Dover's powder in small, frequently-repeated doses, together with boracic acid in 10- or 15-grain doses three or four times a day. None of these, however, may be expected to cure well-established cystitis, and Dr. Madden claims that there is no method of effecting this object excepting by giving the diseased endo-vesical mucous membrane, and, in cases of long standing, the equally diseased submucous walls, absolute rest.

This may now be secured in either of two ways. First, that advocated by Dr. Emmet, on the suggestion of the late Dr. Marion Sims,—namely, by the establishment of an artificial vesico-vaginal fistula, through which the urine may drain away as fast as secreted. In this way, by the removal of the irritation caused by its presence, and consequent continual stimulus on the hyperæsthetic endo-vesical structures, we may afford the patient a fair chance of escape from death from extension of the disease to the kidneys. The objections to this plan of treatment are, first, the common difficulty of keeping the artificial opening patulous sufficiently long to allow the diseased bladder to regain its normal condition; secondly, the irritation occasioned by the button commonly used for this purpose; and, thirdly, the more exceptional trouble which we meet in some cases of closing the fistulous opening when the desired object had been attained, and the consequent misery resulting from this mischance by which the patient's last condition would thereby be rendered still worse if anything than her former one.

For these reasons Dr. Madden has abandoned this operation, and believes that we may obtain all its advantages without any of its inconveniences, more effectually, more easily, and more safely, by simply so thoroughly dilating the urethral canal as to paralyze its contractility for a considerable time, and by repeating this procedure as often as may be necessary, and at the same time, in some exceptional cases, carefully curetting with a blunt wire curette the proliferating endo-vesical mucous membrane, or even without this, in most cases, by freely brushing it over with diluted carbolic acid until its morbid sensibility is thoroughly destroyed. The acid is best employed in the form of the glycerin of carbolic acid (B. P.), which is quite strong enough for the purpose, and is introduced on a saturated piece of Lawton's cotton by an ordinary holder, passed in through a dilator so as to avoid its being brushed off in the canal, and thoroughly applied to every part of the bladder, and retained for a few moments until the vesical membrane contracts firmly upon it. The application causes very little pain, but this may be prevented by first introducing in the canal a ten per cent. solution of cocaine. It seldom requires to be repeated more than a couple of times, at intervals of a week, to effect a cure of the most aggravated cystitis.

THE SUBCUTANEOUS INJECTION OF QUININE, WITH A CASE SHOWING THE UNUSUAL EFFECTS OF THE SAME.

At the meeting of the Italian Medical Society in October, 1889, Bacelli described the results he had obtained in cases of malaria, from the intravenous injection of a one per cent. neutral solution of quinine, to which a little chloride of sodium had been added.

Bacelli stated that only transitory effects were produced by the injection of .1 to .3 quinine, that by increasing the dose to .3 to .6 complete defervescence generally followed, and that in the severest cases it was necessary to inject 1.

Köbner contrasts these results with those obtained by himself. He used the same preparation of quinine, only in small doses, and injected subcutaneously instead of intravenously.

Köbner has practised the subcutaneous injections of quinine since 1870, and published some results in the "Memorabilia" (Heilbronn), 1880.

The method has been little taken up by others, and this he thinks is due to the use of solutions containing free acid, to the use of very slightly soluble irritating compounds such as the formate, bisulphate, and lactate, or to the use of unsatisfactory substitutes for quinine, such as quinidine hydrochlorate.

The hydrochlorate of quinine is to be preferred on account of its greater solubility in water, and of its containing a larger proportion of the base. The solubility of the salt is much increased by heat and by the addition of glycerin. The solution should be injected lukewarm, and then gently rubbed into the areolar tissue.

Köbner prescribes the following for four injections:

> Quinine hydrochlor., .5 to 1;
> Glycer. pur,
> Aq. dest., āā 2;
> Disp. *sine acido!*

If kept long, a little distilled water must be added to make up for evaporation.

His most brilliant results were obtained in cases of intermittent neuralgia, the injections being always made in the back, except in cases of neuralgia of the fifth nerve, when the temporal region was often chosen. The dose in these cases ranged from .10 to .15 quinine hydrochlorate.

In cases of intermittent fever, Köbner recommended injections of .25, and, if necessary, two or three such injections at the same time at different points of puncture. This method he has practised with gratifying results, and without the production of local inflammation.

Dr. Richard Kohn has extended the use of these injections to cases of chronic mental disease. He finds that acute exacerbations in these cases can be cut short or prevented by the subcutaneous injection of the above formula, giving .8 quinine in four punctures. Only tinnitus aurium was complained of; no nausea; no abscess.

Köbner describes the case of a little boy, aged 4½ years, who exhibited a most remarkable idiosyncrasy to the action of quinine. The child was extremely delicate, with a white, almost transparent skin. He suffered from nervous irritability and sleeplessness, and for fifteen months had been greatly troubled by urticaria. Three years previously, during an attack of typhoid fever, a few small doses of quinine (.05) administered by the mouth had produced vomiting, extreme pallor, and dulness of

ating. He was now given a subcutaneous injection of quinine (.3). Two hours afterwards three or four spots of purpura appeared on the chest, then others on the abdomen and thighs; next followed colic and hemorrhage from the anus. Five days later the injection was repeated with the same result.

This boy exhibited in marked degree the anæmia and irritability, especially of the skin, which always characterize those individuals who are predisposed to the ordinary symptoms of quinine intoxication.

Köbner warns us, therefore, that since such serious symptoms may possibly attend the subcutaneous injection of quinine, the chance of their appearance will be greatly increased by the large doses and intravenous method of Marcelli.—*Medical Chronicle*, July, 1890.

Reviews.

FACT AND THEORY PAPERS, No. 1. THE SUPPRESSION OF CONSUMPTION. By G. W. Hambleton, M.D., President of Polytechnic Physical Development Society of Great Britain.
New York: N. D. C. Hodges, 47 Lafayette Place, 1890.

Fact and theory gives one a wide range. The two cover everything worth having, but associated together make strange companions. Every theory is framed to account for facts, or their counterfeits. Every fact does duty, sooner or later, as one of the pillars of a theory; and in the somewhat strange architecture of theory the same fact may be one of the main supports of many theories, more or less antagonistic to each other and every other. The inhabitants of our globe die with tubercular disease. This is the grand fact. But the theories based upon this widespread mortality—in the effort to account for it—are in number legion. The author of the paper has his theory, and considers the others one by one, and demolishes them. The bacillus dies hard, but even it dies,—in the author's opinion. And there remains—still in the author's opinion—his own triumphant theory,—that tuberculous disease is due to a want of proper expansion of the thorax, and to a want of pure and proper air with which to expand it. This theory the author, with becoming modesty, has allowed, so far as I can judge from a somewhat hasty perusal of the paper, the reader to consider as solely his, the author's, own invention and discovery. It seems old and worn; it seems almost like part of the common stock of medical knowledge. Other observers have worked this line, he admits, for he refers to their labors, but still he springs it upon the reader as a startling novelty. Any one can get good chest expansion at will. The children of consumptive parents, he tells us, are born with as capacious chests as other children. He gives us a table of adult measurements, showing how we all ought to expand from six to seven inches between minimum and maximum. This seems a good deal. Much more than the life insurance examiners seem to expect. But the most curious statement in the book is the author's account of how he experimented in producing phthisis by limiting the expansion of the thorax, and probably by vitiating the air,—inspired in a previously healthy subject,—developing, he tells us, all the physical signs of the disease, and then—with how much haste and trepidation, with how much self-reproach and anxiety, he does not tells us—restored the patient by his own patent method of chest expansion. We know he was glad when the patient recovered, and we read between the lines that he has not repeated that experiment. How much it proved, and how much the whole paper proves, we leave to the curious reader to decide. E. W. W.

A TEXT-BOOK ON DISEASES OF THE EYE. By Henry D. Noyes, A.M., M.D. 733 pages.
New York: Wm. Wood & Co.

In attempting a review of this extensive and excellent treatise on the diseases of the eye, it is possible only to allude to its most salient features, and touch briefly upon the author's methods.

The work, as might have been expected at the hands of the author, is intensely practical and bristling with his own personality on every page.

It is divided into two parts. In Part I. the anatomy and physiology of the eye and its functional disorders are considered, to which two hundred and eight of the seven hundred and thirty-three pages are devoted. In Part II. the "inflammations and organic textural changes" are treated.

The style of writing is terse, clear, and directly to the point in hand. It is very difficult for one familiar with the subject to decide how far this will be satisfactory to the student who shall take up this book as his first text-book in ophthalmology. The short, crisp sentences make a most admirable review

of the present state of our knowledge, but we feel sure that the student will constantly be left in the fog for want of a fuller statement and more thorough illustration of very many important details. We do not mean by this that there are important omissions, but, in reading the condensed statements, one is left with the impression that the author had not time to be a teacher, but that his design was rather to furnish a treatise which should bear the scrutiny of his *confrères* in ophthalmology; that he would not weary them by the presentation of details with which they, like himself, were thoroughly familiar. If such were his design, he has certainly succeeded, for we have rarely read a book in which so much material has been solidly crowded into brief paragraphs and chapters, or where, with so much of the author's own personality, so little objection can be made, because of any want of accord, with a general consensus of opinion.

This characteristic of the book will be felt most in its first part, for the student has greater difficulty in grappling with the functional derangements of the eyes than with its pathological states, since the latter lend themselves, for the most part, to much readier clinical study than do the former, so that we cannot but regret that fuller explanation had not been given with the really admirable, though so condensed, statement of the functional disorders of the eye. In Part I. this objection, if indeed it can be regarded as an objection, disappears, and one reads with unflagging satisfaction the clear descriptions of disease, the latest views of pathology, and, above all, the treatment by a wise therapeutist and a conservative and skilful surgeon.

The entire treatise is pervaded by the spirit of an extended experience. It is constantly evident that the pen is wielded by one who has seen and is familiar with the things of which he writes. But rarely does an author so successfully convey to his printed page both the spirit of investigation which characterizes the laboratory, and the more homely but still fascinating work of the clinic or consulting-room. Where all is so good, it seems unnecessary to enter into any detailed analysis of its numerous chapters, or to select here and there subjects for special comment and criticism.

It gives us pleasure, therefore, to commend this book to every one desiring to know the present state of ophthalmology.

S. D. R.

LECTURES ON MASSAGE AND ELECTRICITY IN T TREATMENT OF DISEASE. By Thomas Stre Dowse, M.D., etc.
Bristol: John Wright & Co.
London: Hamilton, Adams & Co., Paterno Row.

These lectures form an excellent treati for those in the profession desirous of b coming more practically acquainted with branch of medicine ever useful and of gro ing importance. To learn the art of massa perhaps practical instruction is absolute needed; but, so far as this can be subs tuted by didactic instruction, with diagra matic assistance, Dr. Dowse's book does The whole question of when massage do good and when harm, how it acts, and t allied subject of feeding, are discoursed agreeably, pointedly, and impressively. Wh dedicating his book to Dr. S. Weir Mitche the author is a profound admirer rather th a servile follower. He thinks that expe ence in the method has taught him so things hitherto unrecognized even by t master mind, but he is modest in assertin while firm in his beliefs. How massage not taught the reader will discover in the pages, when Dr. Dowse reproduces the a vice to his class given by a celebrated phy cian,—advice which is in every respect da gerous and wrong. It is no wonder that t method of rest and massage pursued in a t tally erroneous way should fail in good r sults.

The principal value of Dr. Dowse's wo lies in the careful analysis he makes in r gard to what cases are unfitted for the re cure. Also in regard to diet, he gives some rules by which we may avoid the err of indiscriminate and improper feeding. T cases given throughout the book are narrat in that graphic style which only an Englis man seems capable of attaining. The illu trations are profuse, and really give one idea of the method of procedure in tr massage.

E. W. W.

TRANSACTIONS OF THE WASHINGTON OBSTETRIC AND GYNÆCOLOGICAL SOCIETY. Vol. II., Octob 7, 1887, to May 17, 1889. Founded October 7, 18

These articles are evidently the selecte product of several years of work, and th editors did wisely in their selection. Fro beginning to end, from the president's addre to the index, the papers are good and worth of publication. Among them are "Some Ob servations on Lactation," by Dr. Geo. Wyth Cook; "Phlegmasia Alba Dolens," by D Chas. E. Hagner; Dr. John T. Winter's nam

on "Croup;" a paper on "The Physical Evils resulting from the Prevention of Conception," by Dr. Thos. E. McArdle, which will be viewed in as many lights by medical readers as it seemed to be in the appended discussion; one, by Dr. A. F. A. King, on "What is the Normal Posture for a Parturient Woman?" which strongly recalls Dr. Englemann's paper on the same subject in the *Transactions of the American Gynæcological Society* some years ago. Dr. King's paper, while by no means wanting in original thought, necessarily travels the already beaten track. There are a number of papers recording each a few interesting cases, one of extra-uterine pregnancy, one of pelvic hæmatocele, and "three cases of diphtheria in which papoid was used." Dr. G. Wythe Cook's paper on the subject of "Maternal Impressions, and their Effect on the Fœtus," leaves the reader in the same uncertainty as it finds him. The publication ends with a paper on "Uterine Fibroid," by Dr. D. W. Prentiss. All these papers show the sign of good, thorough, and conscientious work, and the discussions are especially readable.

E. W. W.

HYGIENE OF CHILDHOOD. SUGGESTIONS FOR THE CARE OF CHILDREN AFTER THE PERIOD OF INFANCY TO THE COMPLETION OF PUBERTY. By Francis H. Rankin, M.D.

New York: D. Appleton & Co., 1890.

If we could only have grown up under the supervision of some such manual as this, how much better we might have been, how much happier, and how much more we might have achieved. For the manuals of a generation ago or longer one must search a long time, and when successful in our quest, how strangely reads much of the advice, how trivial, and often how ill judged, if judged by the light of the science of to-day. But with Dr. Rankin's book in hand how boldly and confidently may almost any one enter upon the task of bringing up a family. Do doubts enter in regard to food or drink or exercise, study its pages, and they are solved. In short, a most excellent work, and one calculated to bring up many a weakling, make it forego its natural instincts, and live by sound science. But for the rough and tough children, the children who are hard to repress, who eat what they want, or try to, who get exercise whether pre- or proscribed, we doubt whether these, the really useful citizens of the future, will be any better for being cut and pruned. Their forefathers and mothers got along without manuals, and seldom asked or were told how many times a day they could eat meat, or knew whether the craving for acid fruits was normal and beneficial, or the reverse. They did get green apples long before science discovered that "the vegetable acids assist digestion."

E. W. W.

THE ANATOMY OF THE CENTRAL NERVOUS ORGANS IN HEALTH AND DISEASE. By Dr. Heinrich Obersteiner, Professor at the University of Vienna. Translated, with annotations and additions, by Alex. Hill, M.A., M.D., M.R.C.S.

Philadelphia: P. Blakiston, Son & Co., 1012 Walnut Street, 1890.

This brochure contains within its covers four hundred and thirty-two pages occupied with clear type of good size, and nearly two hundred wood-cuts of fairly good quality; some of these cuts are diagrammatic, a very large proportion of them are microscopic. The treatise of Professor Obersteiner has been nearly three years before the profession in its original German dress. Nervous anatomy is, however, a subject in itself of extreme difficulty; while the German language seems to lend itself only in a sour, crabbed sort of way to the needs of medical science; at least it is certain that while French works on medicine are usually much easier read than French literary books, German medical books are much harder than the original German prose, and usually require much digging and quarrying on the part of the foreigner, even when his knowledge of the barbarous German tongue is good. There are, therefore, very few English-speaking doctors who, having reason to study the works of Obersteiner, will not thank Dr. Hill for his having dressed up this scientific child in a costume of modern English. Some how or other, when such a child is stripped of its original garb, bits of it are too prone to stick to it here and there, and strangely alter the new costume, and so a sort of German-English results. Dr. Hill speaks in his preface to the English edition of his efforts to prevent this; usually he is successful, but one still notices some remaining shreds. Witness the following sentence in the translation to the preface of the German edition: "Nay more, regions which seem to stand far enough away from nerve-pathology—ophthalmology, osteology, and even dermatology—have come to feel the need of a fundamental orientation of the central nervous organs." "Fundamental orientation" is a euphonious morsel, which would roll well under the tongue of even the great

Johnson; exactly what it means we confess we do not know.

The subject of the work is so far away from the branch of medicine to which the THERAPEUTIC GAZETTE is devoted that an elaborate review of the book would be out of place. Suffice it to say, that it seems to us to constitute the most minute drawing-up of the facts which we have in the English language upon anatomy and histology; that we also feel thankful that the author has stuck to his subject, and has not, as is so often done, attempted to make a treatise upon something else than is indicated by the title of the book.

An exceedingly valuable feature of the translation is what is known as the "Glossarial Index," in which the German names of the various portions of the nervous system, with their Latin and French equivalents, are given. This glossary does not seem to be complete, but contains enough in it to be very useful.

A HAND-BOOK OF OBSTETRICAL NURSING FOR NURSES, STUDENTS, AND MOTHERS, COMPRISING THE COURSE OF INSTRUCTION IN OBSTETRICAL NURSING GIVEN TO THE PUPILS OF THE TRAINING SCHOOL FOR NURSES CONNECTED WITH THE WOMAN'S HOSPITAL OF PHILADELPHIA. By Anna M. Fullerton, M.D., etc.
Philadelphia: P. Blakiston, Son & Co., 1890.

Were works of this kind accessible, one might say that the present volume was not imperatively needed, but with the appalling dearth of all such books, Dr. Fullerton has rendered a service to the community at large which nothing but a perusal of her work can ever repay. The "Hand-Book" is very good, very sound, and clearly expressed, and while principally of use to the students of the institution, for which it was evidently primarily written, may be perused and even studied by others with benefit. The marginal indices are of some assistance, and the work is creditable in appearance. E. W. W.

THE MEDICAL ANNUAL AND PRACTITIONER'S INDEX. Eighth year, 1890.
New York: E. B. Treat & Co.
London: 31 and 32 Paternoster Row.
Chicago: 199 Clark Street. Price, $2.75.

The title-page reads as above. The cover calls itself the "International Medical Annual." But it is the same old "Annual," whose value in preceding years the reviewer has lauded. This year there is perhaps less actually new valuable matter, but if such is the case, the editors are scarcely at fault. We must blame the "lagging footsteps of the year." We have, as a body, perhaps, diverged too much from the beaten path of discovery in general to that of discovery in a few favorite fields.

There is little change in the arrangement of the book. Its topics are still arranged alphabetically, and divided into new remedies and new treatments, but there has been some effort made at padding the work into a larger size. In the new treatments "Thermo-Therapeutics" occupies all the space it deserves, and throughout the work what should be new is oftentimes quite ancient in flavor. But still there is plenty of reading new and instructive to be found in its pages, and we still commend it, though its guise be new and in shape rather more clumsy, which is a great mistake, since the previous volumes were not too large for a capacious pocket.

E. W. W.

HOW TO EXAMINE FOR LIFE INSURANCE. By John M. Keating, M.D., President of the Association of Life Insurance Medical Directors.
Philadelphia: P. Blakiston, Son & Co., 1890.

Dr. Keating has added one more to the number of text-books for the life insurance examiner. The book is carefully written and contains within it the advice of the various companies of reputation to their examiners. Reading the advice, and imagining the examiners to strictly follow the letter of the instructions, the thought presents itself forcibly to the mind that while many might be called,—*i.e.*, "roped in,"—few, indeed, would be chosen, and that companies would be smaller in the number of insured lives, but sounder, and with losses only experienced in old age and fatal accidents. The risks that come up to this ideal standard are, indeed, few. But how few examiners live up to the standard they themselves alone know, and doubtless seldom acknowledge. The work is excellently illustrated, both in the department of physical diagnosis and in that of urinary analysis. E. W. W.

FLUSHING AND MORBID BLUSHING; THEIR PATHOLOGICAL TREATMENT. By Harry Campbell, M.D., B.S., Lond., etc.
London: H. K. Lewis, 1890.

The unique and picturesque title of this book will at once attract the reader. It is agreeably bound and printed, and is illustrated sufficiently for the author's purpose. Morbid blushing, the author thinks, comes from excessive self-consciousness, and he believes that he has successfully established

the rationale of the process. The study of nerve relations into which he enters is thorough and apparently satisfactory, and the portion of the work in which he treats of the remedies for this condition is full of practical interest. The author is quite a polypharmacist, and gives us formulæ, at the length of which the average medical man would surely blush, not morbidly, if detected in the act of writing them. Still, without trial, who can say that chloride of ammonium, ext. tarax. liquid., decoct. aloes co., infus. gent. co., sod. potas. tart., and tinct. lavend. co., all in combination, may not ameliorate or prevent blushing of dyspeptic origin. In the most serious cases, believing that abnormal nerve weakness is the cause, he recommends the "Weir Mitchell treatment" in its entirety.

E. W. W.

SAUNDERS'S QUESTION COMPENDS, No. 6. ESSENTIALS OF PATHOLOGY AND MORBID ANATOMY. By C. E. Armand Semple, B.A. Cantab., L.S.A., M.R.C.P. Lond., etc. With forty-six illustrations.
Philadelphia: W. B. Saunders.
London: Henry Renshaw.
Melbourne: Geo. Robertson & Co., 1890.

For a short cut to the vital facts of pathology and morbid anatomy the book before us furnishes perhaps the best road accessible. Quite up to the most recent researches, with a careful chapter on bacteriology, and with every subject treated in the most concise manner, the facts to be impressed on the mind of the reader stand out with clearness and precision. Where a larger and more pretentious book might go unread, any one can find time at odd moments to acquaint himself with the contents of these pages. The book can be carried in the pocket, and the type, though small, is clear and admirable.

E. W. W.

A TEXT-BOOK OF OBSTETRICS, INCLUDING THE PATHOLOGY AND THERAPEUTICS OF THE PUERPERAL STATE. DESIGNED FOR PRACTITIONERS AND STUDENTS OF MEDICINE. By Dr. F. Winckel. Translated from the first German edition, with the permission of the author, under the supervision of J. Clifton Edgar, A.M., M.D. One hundred and ninety illustrations.
Philadelphia: P. Blakiston, Son & Co., 1890.

There is an immense amount of material in this book. Of course much of it is old and trite, but even this is presented in novel form, from the stand-point of a writer whose surroundings are different from ours. The book goes deeper, too, into many questions than the general midwifery text-book, which so frequently makes its appearance among us. And besides the old, tried, and trusted facts which we can glean from every source, Dr. Winckel has given us much new material, not in any one place, but disseminated throughout the work. The addition to the obstetric department, of one relating to the pathology and treatment of the puerperal state, adds much to the value of the book; and, in the matter of illustrations, nothing but praise can be awarded, both for excellency and originality.

E. W. W.

Correspondence.

BERLIN.

(From our Special Correspondent.)

Professor Thomas Gluck has been elected director of the surgical department of the children's division of the Kaiser and Kaiserin Friedrich's Hospital. Though already filling several positions connected with surgery, his application was, nevertheless, in this instance, preferred to that of several other candidates. Professor Gluck has recently communicated to the Surgical Congress, as well as to the Berlin Medical and Free Surgical Associations, many discoveries in regard to a subject upon which he has been busy fifteen years, having begun to work upon it while he was yet an assistant to Professor von Langenbeck. The subject of these communications is the plastic renewal of the different parts of the human body. Recently it has been more particularly the bones and joints to which Gluck has confined his attention; and it must be confessed that the idea of this reparative process is highly ingenious, and that, moreover, its final results, as regards the preservation of the function of the parts concerned, have proved so eminently satisfactory that it is to be earnestly hoped that the method will soon find a wider field for application in the alleviation of human suffering. By it two widely different, but highly important, objects are obtained. The long bones of the skeleton show, under antiseptic precautions, an almost unbounded capacity of union between their smooth ends, whether of organic or inorganic nature. This fact led, in the clinic and experimenting-room, to fixing in juxtaposition the broken fragments of bone, in accordance with the invagination method; this plan of union can be resorted to in false joints, fractures, and osteotomies for the correction of deformities,

taking care, as far as possible, to fit the smaller into the larger end of the bone, and reinforcing the result with ivory pegs, extending from one fragment to the other. The bones, thus united with the pegs, form at first a kind of hinge-joint, which, being long held in an immovable position, may attain perfect rigidity; or which method, when applied to joints after their resection, may retain, to an extent, the mobility of the articulation. There is scarcely any possibility of the absorption of the implanted pieces of ivory, because masses weighing as much as two hundred grammes have been safely introduced, as well as such materials as glass, etc.

Moreover, Professor Gluck has made a cement to unite the smooth or rough ends of bones to each other. The serrations are touched with the thermo-cautery at a white heat, and the cement, being spread upon the opposed surfaces, the two ends are then united as quickly as possible. This cement becomes as hard as glass in about two and a half minutes after cooling. Moreover, it can be used not only as a method of uniting bones, but also for packing cavities in them, and it is thus possible to cement a foreign body into the substance of a bone with perfect safety. If later on this antiseptic cement forms a hard ring at the point of union, it will behave just like any other trivial osseous enlargement, but with this fundamental distinction, that it is called upon to play an important part in definitely contributing towards forming the fixidity of the would-be joint, and also that this immobility is obtained in a careful and systematic manner. In fourteen cases of joint-disease, in which resection was indicated, Professor Gluck has, as a rule, resorted to this method by invagination. In each instance the apparatus has been rendered antiseptic, and recovery has been obtained without inflammation. We have, moreover, to mention in these cases the absolute freedom from pus in the parts concerned, under antiseptic treatment; the perfect immobility of the union; the immediate recovery of the original length, as well as the nearly natural subsequent growth of the limb, which is always so desirable in orthopædic operations. In addition to the safe union of such foreign bodies, as the ends of different bones, this method allows every conceivable mode of treatment and the use of any apparatus, as well as its own applicability to troubles in all parts of the body, whether resulting from diseases of the osseous system, dislocations, or united fra tures.

The chair of mental and nervous disea in the medical faculty of the Universit made vacant by the decease of Profes Westphal, and also the professorship of me tal and nervous diseases in the Royal Charit Hospital, have been recently filled by th election of Professor Jolly, of Strasburg. I the mean time, the management of bot these clinical departments of the hospital, a well as the duty of delivering lectures, ha devolved upon the late professor's assistant in their two respective branches,—viz., upo Dr. Oppenheim in the department of nervou diseases, and upon Dr. Liemerling in that o mental diseases. For awhile the report wa circulated that the chair would be discon tinued, so that a department of psychology and neurology might be instituted; several men were thought of and their names dis cussed in connection with it. Now, how ever, the vacancy has been filled, and filled too, in a manner that reflects credit upo our faculty.

The fact that the selection of new meth ods is a matter upon which no one can ex ercise too much care is so well known tha I need offer no apology for my action in th present instance. Still I must here—accord ing to authentic records—abridge what I wrote in my last letter; for I also have been too enthusiastic in my praise of pyoktanin the new antiseptic. According to repeated and confirmed reports, it has become estab lished that the results obtained with it in th treatment of wounds, while excellent, do no differ materially from those obtained by othe modes of antiseptic treatment.

There has also arisen a mistake, which, a all events, is worthy of mention, and which might become detrimental to the universal introduction of the aniline preparations; and this is the intense coloring of the skin surrounding the wound that is exposed to violet rays of the spectrum. While we may, when using the non-coloring agents as dress ings, well mark and outline the extent of in flammation around a wound, it is not possible to preserve this advantage when we resort to the use of pyoktanin, as it stains everything a similar dark-violet color. The extent, how ever, of the processes of infiltration, etc., may be outlined by the physician through the rather stronger staining by the violet ray upon the affected tissues; and as a knowledge of the extent of the disease has been considered rather detrimental to the patie

himself, the power of preventing it cannot be anything but in favor of the preparation which does so.

Opinions in regard to aristol seem favorable. So far reports of the results obtained by the trial of the preparation in all countries are uniformly encouraging, and it is, perhaps, possible that aristol, while nothing is yet permanently decided about it *pro* or *con*, may be winning for itself a lasting place among drugs.

Finally, I have to mention a few things in regard to the International Congress. When these lines reach you our welcome guests will be already among us. Still, as not all our colleagues can accept our invitation, I shall append a few notes about the manner of conducting the approaching festivities. In the first place there have arrangements been made for holding an evening of welcome; for the next day a dinner in the Berlin senate-house has been announced. Next comes the Berlin representation, and then the dinner of classification takes place. Next, his majesty has determined to invite four hundred members of the Congress to Pottsdam, and on Saturday there have been arrangements made for the final dinner in the rooms of Kroll's establishment, which feast is given by the medical profession of Germany.

In conclusion, let us all most fervently unite in hoping for the highest success of the Tenth International Medical Congress in the capital of the German empire.

BERLIN, July 17, 1890.

A RARE COMPLICATION OF WHOOPING-COUGH.

To the Editor of the THERAPEUTIC GAZETTE:

DEAR SIR:—An epidemic of measles has been giving the doctors in this vicinity a vast amount of trouble for the past two or three weeks. It has been very much more malignant than is usual with measles, and pulmonary complications have been the rule. A few weeks since I was called to attend a boy, 7 or 8 years of age, who had been taken with the disease a week before, and was then suffering from a severe attack of bronchopneumonia, superinduced by the measles; and, to add still further to the gravity of the case, he had, a few days before, begun to show symptoms of pertussis, and that disease was now fully developed. The eruption of measles had almost entirely disappeared, but his temperature was 104°, pulse 140, and there were coarse mucous râles all over both lungs. He was coughing almost continuously, expectorating freely a thick, yellow, somewhat tenacious sputum. At intervals, of perhaps an hour, he would have the most terrible paroxysms of coughing, at which times there would be the characteristic whoop of pertussis. He was put upon appropriate treatment, and the case progressed without any especially untoward symptoms until the third day after my first visit. At about ten o'clock on the morning of that day he was seized with a more than usually severe paroxysm of coughing, and, after he had become quiet, his nurse noticed a puffy swelling making its appearance in the region of the parotid gland, which increased rapidly in size and extended down upon the chest as low as the second rib. It also reached as high as the cheek-bone upon the right side, and stuck out prominently beneath the chin, exactly like a huge goitre. It was about two hours, according to the nurse's statement, from the time the swelling was first noticed until it had attained the size and appearance it presented at the time of my visit the next day. There was distinct fluctuation in the tumor, and, when pressed upon, it gave a peculiar rustling sound, similar to that produced by crushing soft paper in the hand. There was no discoloration or pain, and the tumor caused no inconvenience, except that due to its size. The extreme rapidity of its formation caused me to suspect the rupture of a blood-vessel in the region of the neck, and the extravasation of blood into the subcutaneous cellular tissue. I could not account for it on any other hypothesis, and therefore made no effort to evacuate the tumor. As stated above, it caused the patient no inconvenience whatever, but the complication of diseases from which he was suffering proved too much for his delicate constitution, and he died on the morning of the sixth day after its appearance. On the third day a slight reduction in size could be detected, and it gradually but rapidly dwindled until his death, when it had almost disappeared.

Now, the question is, Was I right in supposing it to contain blood, due to the rupture of a small vessel somewhere in the neck, or was it air? And, if the latter, how did it get there? The case was a decidedly unique one to me, as in a practice of ten years I had never seen or heard of anything just like it, and if there is a similar case recorded in medical literature, I have been unable to find

it after an extensive search. I would be glad to have your opinion, or that of some of your readers, as to the character of the tumor, its causation, and what would have been the probable results had I used the aspirator or attempted to evacuate with the lancet.

WALTER P. ELLIS, M.D.

LIVERMORE, KY.

[We have been entirely unable to solve the problem offered us by Dr. Ellis. At first it seemed that fuller details might perhaps serve to throw some light on the matter, and, as a result of the inquiry, the letters published below were received from Dr. Ellis. Aspiration with a hypodermic needle could have done no harm, and would probably have cleared the whole matter up. We have to confess, however, that no explanation of the nature of the tumor which is supported by the facts reported by Dr. Ellis occurs to us that is at all tenable. We have referred the matter to Dr. Louis Starr and other specialists, but without receiving any sufficient explanation of the nature of the case. We would be glad to receive any suggestions from our correspondents on this matter.—ED.]

LIVERMORE, KY., June 13, 1890.

ROBERT MEADE SMITH, M.D., PHILADELPHIA, PA.:

DEAR DOCTOR:—Your letter of the 9th inst., asking for further information concerning the case I reported recently, was received yesterday, and I hasten to respond to your queries *seriatim*. 1. The tumor was situated exactly on the median line, but extended a little higher up on the right side, which was due, as I thought, to the fact that he lay on his left side almost all the time. 2. The boy was one of a family of eleven, all boys, all living, and without indications of any constitutional taint whatever. 3. As to the measles proper, there was nothing peculiar about the case, except the bronchial symptoms developed early, and were unusually severe. He began whooping about the time the measles eruption disappeared. 4. There was some difficulty in swallowing solids at first, but that passed off in a day or two, and after that there was no trouble. 5. The respiration and cough were such as would be expected in a case of severe bronchial catarrh complicated with whooping-cough, before the appearance of the tumor, and there was no noticeable change in either afterwards. 6. I attributed his death to asthenia. The paroxysms of coughing were so very severe that he weakened rapidly, and it was a source of wonder to me that he did not succumb sooner than he did.

I wanted to use the hypodermic needle in order to determine the character of the contents, but the father objected so strongly that I was forced to abandon the idea. He was a very illiterate countryman, and my arguments could not overcome his dread of having an instrument of any kind used on his boy. The boy suffered no inconvenience from the tumor that I could discover, except that due to its size, and it gradually dwindled until his death, when it was about one fourth as large as at first. I have talked with several of my neighboring physicians, and they differ in their opinions as to the nature of the tumor. Some think it was simply an emphysema, while others think it may have been caused by the rupture of a blood-vessel, the blood collecting beneath the subcutaneous cellular tissue in that locality. The last is my own opinion. At any rate I have never seen or heard of anything just like it. Hoping this will enable you to throw some light on the case, I remain,

Very truly yours,

WALTER P. ELLIS.

LIVERMORE, KY., June 26, 1890.

ROBERT MEADE SMITH, M.D., PHILADELPHIA, PA.:

DEAR DOCTOR:—Your letter of the 23d inst. is at hand, and I hasten to respond. I was not aware of any inconsistencies in my communications, but probably I was not as clear or minute in describing the location of the tumor as I might have been. It began just beneath the chin, in the region of the *thyroid*, and extended over *both parotids*, a little higher on the right than on the left side. It filled all the space beneath the chin, and stuck out prominently, almost, but not quite, as large as a small fœtal head. It did not cause any change in the character of the respiration, which had been and continued to be after the appearance of the tumor, such as would be expected in a severe case of bronchitis complicated with pertussis. The dysphagia was slight, so slight, indeed, that I did not attach much importance to it, and was not noticeable after the first day or so. The pressure from the tumor all seemed to be outward, affecting the throat but little, if any, neither was there any appreciable change in the color of the face,—that is, there was neither increased pallor nor flushing. There

was sufficient fluctuation to cause me to think the contents might be fluid, but the crackling or rustling sensation spoken of in my report of the case was very distinct. I kept no notes of the case, but just report it from memory. I hope, however, that if the report was obscure this will make it plain.

I remain,

Very respectfully yours,

WALTER P. ELLIS.

THE SUBCUTANEOUS USE OF MORPHINE IN PUERPERAL CONVULSIONS.

To the Editor of the THERAPEUTIC GAZETTE:

DEAR SIR:—The article in your last November's issue on the various ways of treating eclampsia affords to my mind a striking instance of the slow progress of truth, and the constant liability to misrepresentation and mistake in practical therapeutics, that department of our art to which every other is merely subsidiary and preparative. Allusion is there made to myself as "one of the first to advocate the free use of hypodermic morphine in puerperal eclampsia;" in an article printed in the July number (1880) of the *American Journal of Obstetrics*, "which made considerable impression in this country," I am represented by your correspondent as advising "hypodermic injections of morphine, ¼ to ½ grain, frequently repeated, till, it may be, two or three grains were administered."

Now, had Dr. Hurd had my essay before him, he would have seen that I by no means originated, or claimed to originate, any such mode or measure of treatment for this fell disease. Morphine had been used in doses like those by various persons all over the country before my time. What I claimed in that article to have discovered, and endeavored to make certain by various arguments and illustrations, was that, in the state of the human system that permits or leads to an attack of eclampsia, there exists an exceeding tolerance of morphine, and that the dose of it to be administered must be proportionally large in order to be effective.

Accordingly, my instructions were that a patient attacked "with puerperal convulsions should have forthwith injected into her arm 1½ grains of morphine," and should the paroxysm return any time after two hours (when the medicine might be presumed to have exercised its full effect), "this dose should be repeated."

I will not now load your columns, Mr. Editor, with the somewhat thorough discussion of the subject there set before the public; but will content myself with saying that, whereas, when that article was written the members of our county medical society, including at least five-and-twenty practitioners of the first order of ability, to say nothing of more than as many others of the common sort, were utterly at sea on the subject of the treatment of this disease; some trusting to anæsthetics, about an equal number to bleeding, one of the most skilful among us to croton oil, and a few to "reasonable" doses of morphine, and though my alarming contention and advice were for a while stoutly disputed, yet now I know not of a single member of that society of any standing who ever thinks for a moment of using any other treatment of this fearful disease than that above recommended. Certainly there is not one, unless it be some pin-feather graduate of the schools.

Nor is this all. Not many years after the publication above referred to, I found, as the reason of the thing might well have taught me, that the same drug was by far the best of all known remedies for recurrent infantile convulsions, which piece of practical therapeutics I also made known to the profession through the columns of the same widely-read journal, but in what number I do not now recall nor can I easily ascertain.

Very truly yours,

C. C. P. CLARK, M.D.

OSWEGO, N. Y.

Notes and Queries.

RHINOSCLEROMA.

An excellent summary of this rare disease is given by WOLKOWITSCH in the *Centralblatt für Chirurgie*, No. 23, which will well repay perusal. This complaint was first described by Hebra in 1870. It is characterized by a hard swelling appearing in the nose and its neighborhood, by a very chronic course, and resistance to remedies. Cases have been recorded from all parts of Europe, but they have chiefly occurred in the eastern parts of Austria and the southwestern provinces of Russia; a few cases have also been observed in Central America. Wolkowitsch has collected seventy-six cases, in addition to eleven recorded by himself. The disease commences very insidiously. The most common site of

origin is the deeper parts of the nose, and occasionally the pharynx and larynx; in one case it started from the hard palate. Wherever it may have originated, the middle of the nose very seldom escapes, and the disease generally spreads to the following parts: the mucous membrane and subjacent tissues of the nares, the upper and lower lips, the tissues around the upper jaw, and occasionally even to the lachrymal tract and Eustachian tube. The progress is continuous and symmetrical. Of eighty-five cases, the mucous membrane of the nares was attacked in eighty-one, the cutaneous coverings of the nose in seventy-four, the pharynx in fifty-seven, the larynx in nineteen, the trachea in five, the upper lip in forty-six, the upper jaw in sixteen, the hard palate in seventeen, the tongue in four, the under lip in two, and the lachrymal tract in five cases; the ear was affected in one case only. The local changes consisted in the formation of small nodules, or sometimes plates, as hard as cartilage, some being diffuse and others sharply circumscribed. These usually had their origin in the deeper layers of the skin and mucous membrane. There was a considerable amount of brawny swelling around the nodules. A retrograde metamorphosis occurred in some cases, leaving hard and contracted fibrous tissue, so producing more or less distortion of the features and constriction of the upper respiratory passages. The nodules never broke down unless some complication occurred, or as the result of irrational antisyphilitic treatment. The subjective symptoms were few. At the first there was usually an ordinary nasal catarrh; there was loss of smell, but the patient suffered very little pain throughout. Occasionally, however, fissures formed in the lips, producing considerable difficulty in speaking and eating. If the larynx or pharynx were much affected, dyspnœa was marked, often producing very serious symptoms. The disease was exceedingly chronic, lasting fifteen to twenty or even twenty-six years. The diagnosis from syphilis was often difficult. The only treatment of any avail was excision. A microscopical examination of the tissues was made in ten cases. The most marked histological features were a round-celled infiltration and a large amount of fibrous tissue, together with numerous larger cells, and the formation of small round spaces,—"vacuoles,"—due to hyaline degeneration of the large cells. The hair-follicles and sweat-glands were atrophied. Micro-organisms were always found. They, stained by Gram method and morphologically, could not b distinguished from Friedländer's pneumococcus. They occurred in large numbers, an from their constant occurrence, they seeme to bear an etiological relation to the disea although inoculation experiments were u successful.—*Lancet*, July 12, 1890.

THE odor of ichthyol may be disguised b oil of citronella. The latter is itself em ployed, in Ceylon, against rheumatism.— *Western Druggist*, July, 1890.

LANOLIN.

The great progress which has been mad in all directions in which the manufacture medicaments is involved has not been bett illustrated than in the case of lanolin. Lan lin (Liebreich) now constitutes an unexce tionable product,—soft, free from odor, an nearly white.

What is commonly known as "lanolin consists of true lanolin, with twenty-thre per cent. of water added. Lanolin is th only perfect substitute for all ointment base in officinal and in non-officinal preparations

Its superior qualities may be summed u thus:

1. It never turns rancid.

2. It does not cause the slightest irritatin effect on the most tender skin, and it rapidl penetrates the tissues, leaving no trace fatty nature.

3. It can be mixed with any preparation fats or oils, vaseline or paraffin. It can b incorporated with more than its own weig of water.

4. It is aseptic; no germs or microbe can live in it, as is the case with fats or oils.

The latter fact was proven by the re searches of Dr. Gottstein (*Berliner Kli Wochenschrift*, No. 48, 1887) and C. Frank (*Centralblatt für Bacteriologie*, Bd. 1, No. 1887), who compared lanolin with other oin ment bases, such as culture media for m crobes, and who found lanolin alone to b quite aseptic.

Lanolin in itself is of somewhat too stick a nature to be used *per se*, but it may be use as an incomparable ointment base by the ad dition of vaseline or paraffin oil.

The best preparation is that of H. Helbin (*Chemist and Druggist*, April 27, 1890). consists of—

Lanolin, 65 parts;
Paraffin oil, 30 parts;
Ceresin, 5 parts.

Lanolin, 65 parts;
Vaseline, 35 parts.

The superiority of lanolin over all other tment bases is the reason that the new rmacopœias of Austria and Russia have pted lanolin, and that the new Swiss rmacopœia will also adopt it.

The property of lanolin to mix easily with er was first instanced by the great author- in dermatology, Unna (*Therapeutische natshefte*, 1890, No. 2–4), in Hamburg, called attention to its adaptability to the paration of cooling ointments, which, in es of inflammation, give excellent results, ng to the evaporation of the water con- ed in the lanolin.

Further, this property of lanolin is of im- tance in the treatment of the mucous mbranes. Professor Frankel (*Berliner n. Wochenschrift*, No. 5, 1886), of Berlin, used lanolin in the treatment of the cous membranes of the nose and the rynx with very favorable results.

This property of lanolin has caused Dr. per (*Berliner Klin. Wochenschrift*, No. 5, 7) and Dr. Finger (*Wiener Medizinische chenschrift*, Nos. 46, 47, 1887) to use it h excellent results in the treatment of norrhœa in the form of an argent. nitr. tment. The advantage of this treatment hat this ointment absorbs the secretion of urethra and brings the medicament di- tly in contact with the mucous membranes the same.

As to the second point, Dr. Lassar, derma- logist, of Berlin, and Professor Doyon, of is, have found that in over four hundred es in which they used lanolin no irritation s ever produced.

Dr. Lassar (*Berliner Klin. Wochenschrift*, . 5, 1887), Dr. Edm. Stern (*Deutsche dicinische Wochenschrift*, No. 15, 1886), . Shoemaker, Philadelphia (*Medical and rgical Reporter*, 1886), Professor Smith, Dub- (*British Medical Journal*, June 12, 1886), . Wende, Buffalo (*British Medical Jour- l*, February 13, 1886), Professor Campana, noa (*Bollet. della R. Academia di Genova*, 86), Dr. Berend, Berlin (*British Medical urnal*) have found that psoriasis, pytiria- , seborrhœa, impetigo, scabies, tinea favosa, mes tonsurans, sycosis acne, tylosis, and mas are completely cured with lanolin nts.

In cases of eczema in children, equally favorable results were obtained by Professor Widerhofer, Vienna (*Allg. Wiener Med. Ztg.*, 1886), and Dr. Walfsberg, Christiana (*Therapeutische Monatshefte*, March 5, 1887). The latter reports that he obtained in cases of pruritus and prurigo senilis by the use of lanolin ointment, without other medicaments, most remarkable results.

Geheimrath Mayer and Geheimrath Brandis, in Aix-la-Chapelle, have made thorough tests of lanolin with mercury ointment, and consider the lanolin superior to all other bases for this purpose. In no case did it show an indication to produce eczema. The same is reported by Professor Lang, of Vienna, and Dr. Frost, in their publications on the use of gray oil in syphilitic affections.

With all these properties it is not difficult to predict for lanolin a long career of great usefulness in dermatology, therapeutics, and the general hygiene of the skin.—*Medical World.*

ARISTOL is said to be an excellent application for piles, both external and internal.—*Western Druggist*, July, 1890.

AURAL AND CUTANEOUS COMPLICATIONS IN INFLUENZA.

According to the Vienna correspondent of the *British Medical Journal* (July 19, 1890), DR. A. EITELBERG, of Vienna, assistant to Professor Urbantschitsch at the Vienna General Poliklinik, writing (in the *Wiener Medizinische Presse*) of aural complications in influenza, states that during the recent epidemic in Vienna he had seen at least a hundred cases of such complications. Blood extravations over the different parts of the membrana tympani, from the size of a pin's point to that of considerable vesicles, were frequently met with. The tympanic membrane itself, and the mucous membrane of the tympanic cavity, were very often hyperæmic. He had frequently seen severe hemorrhages from the ear as the result of those conditions, and he is even inclined to consider these severe and continual hemorrhages as a characteristic symptom of the tympanitis of influenza. Dr. Eitelberg points out that, in spite of the severity of the symptoms (the patients often being unable to sleep for several nights owing to agonizing pains shooting through to the head and sometimes towards the shoulder), the course of the affection was,

as a rule, exceedingly favorable, and ended in complete recovery in a relatively short time.

Professor Urbantschitsch told him that among his own numerous cases there was one of vegetation, in two cases the mastoid process was transiently affected, and in two others deafness remained behind for a certain time after the inflammation had run its course. Tenderness over the mastoid was observed in nearly every case. This, however, soon disappeared, except in one case in which the mastoid region had to be submitted to direct treatment. Otitis externa was a much more disagreeable complication, owing to the intensity of pain. Pledgets of cotton-wool steeped in a five per cent. solution of carbolic acid and glycerin were of service in such cases.

Dr. Eitelberg cites some cases in illustration of the rapid subsidence of inflammations of the middle ear; among them may be mentioned the following: A woman, aged 40, became affected with bilateral purulent otitis media after an attack of influenza. The ear affection set in with fever and severe pain, which, starting from the ears, spread over the whole head, and reached as far as the arms. The auditory canals were washed with a weak lukewarm solution of common salt. After cleansing the parts with cotton-wool, the membrana tympani was found to be red and swollen on both sides. Perforation could not be detected at the first examination. Besides pain in the ears and headache the patients also had the sensations of throbbing and pulsations in the ears. There was no tinnitus. The tragus and mastoid process were very tender on pressure, and great deafness was present. The case was treated with pledgets of cotton-wool steeped in a five per cent. solution of carbolic acid and glycerin inserted in the external auditory canals, and by instillation of some drops of the same solution which were allowed to remain in the ear for five minutes. Lukewarm poultices were applied over both ears. At the next examination perforation of both tympanic membranes was found to have taken place. There was copious mucopurulent discharge. The same treatment was continued, but a four per cent. solution of boric acid was instilled after each washing out of the ear. In four days the discharge ceased, and in a week the hearing was normal. The perforations closed.

The average duration of the affection in these and the other cases was from eight to ten days. With regard to simple catarr the Eustachian tubes or tympanic cav connection with influenza, Dr. Eitelberg with several cases in which the insuffl of air, according to Politzer's method, peated two or three times, was sufficie increase the hearing of whispers from metre to from six to eight metres and ward.

In a recent number of the *Orvosi Hetil* Professor Schwimmer, of Buda-Pesth, presses the belief that the streptococcu the cause of the erythematous and erysip tous skin affections met with in influe They might also occur, however, as re symptoms of internal affections. In Petersburg, extensive erythema was observ in Paris, erythematous skin inflammati and occasionally also papular eruptions; Berlin and Vienna, erythema, herpes, urticaria. Professor Schwimmer's own servations included, 1, herpes of the lips alæ of the nose in one case; herpes iris circinatus combined with erythema iris circinatum in two cases; 2, erythem namely, three cases of erythema exsudativ multiforme in great number; in one c with subsequent desquamation; 3, urtic in two cases, once in a man, aged 65, once in a woman, aged 60; 4, measles i child, aged 12, and in another, aged 14 ye after influenza, when no epidemic of mea was prevailing. In three cases (all wom psoriasis occurred. The chief characteri of the affection, therefore, was that they w of angio-neurotic type.

OIL OF CINNAMON is claimed to be fatal the typhoid microbe.—*Western Druggist*, Ju 1890.

POTASSIUM TELLURATE IN THE NIGH SWEATS OF PHTHISIS.

In the *Wiener Klinische Wochenschrift* June 5, DR. EDMUND NEUSSER relates experience with potassium tellurate as remedy for the night-sweats of consumptiv He used it in the form of a pill, giving first .02 gramme (about a third of a grain) a dose. In most of his cases this proved s ficient, but a few patients began to sw again after a time, and with them he doub the dose, generally with good results. but few instances were any toxic effect served, even with doses of a grain; it only after their prolonged use th

of the kind occurred, and then the symptoms were only those of moderate disturbance of digestion. An objection to the employment of the remedy, however, is the fact that it imparts an intense garlicky odor to the breath, but generally this is not perceived by the patient, although two of the patients complained of a sulphurous or camphoraceous odor of the eructations.—*New York Medical Journal*, July 5, 1890.

ARISTOL IN OZÆNA.

Iodide of thymol—or aristol, as it is called—is strongly recommended by DR. LÖWENSTEIN, of Elberfeld, in ozæna. He gives in the *Internationale Klinische Rundschau* several cases in which this remedy proved more efficacious than any other. In one case, the patient, who had previously been treated with iodoform, would have been discharged from his employment on account of the smell of the drug; aristol was then employed with the most satisfactory results, the fetor vanishing, the ulcerations healing, and the scabby crusts ceasing to form. Dr. Löwenstein makes use of insufflations, which answer very well, as aristol is a fine powder. He also paints ulcerated spots with a mixture of 1 part of aristol in 10 parts of flexile collodion. It is necessary to keep aristol in a dark-glass bottle, as it is easily acted on by light. It may be remarked that it has a very slight but not unpleasant odor, and that it is remarkably cheap.—*Lancet*, July 5, 1890.

SANTONINOSSIME—A NEW ANTHELMINTIC.

According to PROFESSOR COPPOLA (*La France Médicale*, July 18, 1890) santonin, even in large quantities, does not kill ascarides, while on account of its solubility and the facility with which it enters into soluble combinations, it is readily absorbed by the gastro-intestinal mucous membrane, and produces more or less marked symptoms of poisoning. Santoninossime is a derivative of santonin, and is obtained by heating 5 parts of santonin with 4 parts of the hydrochlorate of hydroxylamin with 3 to 4 parts of lime in the presence of alcohol. The preparation occurs in needles, insoluble in cold water, soluble in boiling water, soluble in alcohol and acetic acid.

It is stated by Coppola to be only with difficulty absorbed, and may be given in two or three times the sized doses in which santonin is prescribed, while its therapeutic effect is very much more marked, and its administration is free from any attending disturbance. Its use after two or three days should be followed by a purgative.

GURJUN OIL is recommended as preferable to copaiba in chronic bronchitis.—*Western Druggist*, July, 1890.

FOOD PRESERVATIVES.

The use of preservatives for articles intended for food and drink is an important one, both for the manufacturer and the consumer. From a sanitary point of view, it is doubtful whether any of the preservatives ordinarily added to articles intended for human consumption ought to be encouraged. Laws exist in continental European countries prohibiting the use of certain of these preservative agents. Salicylic acid is prohibited by most of them, and the manufacturers are there beginning the use of benzoic acid, which is preservative in small amount and is not easy to detect. After a discussion at a convention of chemists at Speyer, Bavaria, on the 10th of September, 1888, the conclusion was reached that boric acid, as a preservative for foods, is to be regarded with caution. Sanitary authorities have generally spoken in stronger terms of the use of boric acid, and yet it enters into the composition of a large number of the preservatives in the market. Hirschsohn (*Chem. Ztg. Repertor.*, 1889, p. 46) gives a description of several different boro-glycerides which he recommends for preserving foods. Boro-glycerin is prepared by heating glycerin with boric acid, in the proportion of 124 of the former to 190 of the latter. He also recommends sodium, calcium, and magnesium glycero-borates. These compounds are mostly tasteless, and quite soluble in water and alcohol.

Magnesium borate is recommended as a remedy in throat affections.

A. R. Rosen recommends the following method for preserving meats: Boric acid or its salts are dissolved in water and the solution is then frozen. The article to be preserved is then covered with this ice, with the result that the meats are preserved after the ice melts.

Dr. E. Polenske (*Kaiserlich Gesundheitsamt*, 1889, p. 198) has made an examination of ten commercial preservatives intended for

meats. Three of the ten contained sulphurous acid or sulphites; two contained borax, and five boric acid; one each contained alum, arsenious oxide, salicylic acid, and free phosphoric acid; two contained glycerin, and two boro-glycerin; three contained nitre, and six common salt. The one containing arsenious acid (1⅗ grains per quart) was sold under the name of "Stuttgart Preserving Fluid for Meats." (Translated.)

This was the only one actively poisonous, but several of the others were decidedly objectionable. Indeed, we should object to the addition of anything to our meats which is not a natural ingredient of food or cannot be converted into a compound natural to the human body.—*Brooklyn Medical Journal*, August, 1890.

ARISTOL in suppositories is prescribed in 5- to 10-grain doses.—*Western Druggist*, July, 1890.

SUCCESSFUL REMOVAL OF A TUMOR IN THE BRAIN.

According to the Berlin correspondent of the *Lancet* (July 19, 1890), at a recent meeting of the Berlin Medical Society, DR. H. OPPENHEIM described an operation of this kind. The patient was a woman aged 36. She had enjoyed excellent health till last September, when she began to suffer from clonic spasms in the temporal region and in the left arm, and frequently fell into convulsions. On recovering consciousness she complained of pain in the right temporal region. The symptoms recurred, and a diminution of the sensibility of the left arm and side set in. The diagnosis pointed to a growth in the brain. As internal treatment only made the patient's condition worse, and the left foot also became rigid, the skull was opened on April 26, under antiseptic precautions, and the surgeons removed a tumor about the size of a crown-piece. The patient has felt decidedly better since the operation. She can move the left arm and foot without difficulty, and can walk about.

THE SOLUBILITY OF SANTONIN IN CASTOR OIL.

To obtain a solution of santonin in castor oil it is necessary that the santonin be reduced to the form of an extremely fine powder, and then be dissolved in the castor oil by the aid of heat in a water bath with continued agitation. It is difficult, however, to obtain solution even in hot castor oil up to three to four per cent., for, on cooling, even though solution may have been complete while warm, santonin deposits in the form of crystals. If, however, small quantities are employed, and the solution be no greater than one per cent., a clear preparation may be obtained by the aid of heat, in which no precipitation occurs even at the ordinary temperature within three or four days.—*Répertoire de Pharmacie*, July 10, 1890.

POISONOUS EFFECTS OF EXALGINE.

In the *British Medical Journal* for July 12, 1890, MR. H. F. SEMPLE reports the case of a lady, aged about 40, of hysterical temperament, who had been suffering from nervous headache monthly for the last ten or more years, and who had been treated with all kinds of drugs, but without avail. Recently Mr. Semple writes that he had been administering exalgine, giving 2 grains twice a day, which gave great relief. The attack, however, recurred the next month, and 2 grains every four hours had very little effect, so the dose was increased to 5 grains twice a day. The first dose was taken at 10 P.M., after supper, with great relief to the pain, and the patient slept till 6 A.M., when she awoke, and felt headache coming on again, so took another dose and lay down. In about a quarter of an hour she jumped up with a sudden start and scream, and thought she was dying; she had such curious sensations, felt numb all over, fingers and toes mingled and felt dead; eyelids twitched continuously; the whole head felt as if it was swelled, and kept expanding and contracting alternately. There was great oppression in the region of the diaphragm. In a few minutes the patient vomited and ejected the remains of the medicine. She then felt much relieved, and lay down and slept, after taking a little tea. Two hours after, the patient got up, but felt ill; the headache was slighter, but not gone; the numbness of the fingers and toes remained nearly all day, but beyond this the patient was little the worse for her experience. She went out next day, but says she will be afraid to try the medicine again. Mr. Semple thinks that this so-called poisoning with exalgine is due to its being taken on an empty stomach, as the former dose was well borne when food was present, so he always orders it to be taken after a meal. He gives the drug dissolved in tinc-

ra aurantii and diluted. He has found it seful in toothache, facial neuralgia, and in case of long-standing lumbago. No beneficial effect of the drug has been found from ss than two grains for an adult.

TREATMENT OF SMALL-POX.

M. GALEWOUSKI, of Paris, reports that in he small-pox hospital at Brunn, in Austria, aths colored red with permanganate of potsh are used for the treatment of small-pox. t is stated that after a short stay in the bath he temperature of the patient falls materially, his general health is improved, the ustules are resolved, and recovery sets in.—*Medical Press and Circular*, July 23, 1870.

THIOL (ammonium sulphothiolum), the uccessful rival of ichthyol, combined with ollodium in the proportion of 1 to 20, has een found to give excellent results when pplied to wounds. The durable, flexible ellicle acts as a protector, and favors granuation, while free from the objections of doform collodium.—*Western Druggist*, July, 890.

MOLLITIES OSSIUM CURED BY OÖPHORECTOMY.

Zweifel has already proved that after a orro's operation in a case of mollities, the one disease, usually so intractable, may pass way. This result is not invariable after orro's operation, and, when it occurs, it is pparently due to the removal of the ovaries. R. H. FEHLING has recently noted the above acts in the *Centralblatt für Gynäkologie*. He notes the favorable experience of Hoffa, P. üller, and Winckel, and declares that in ight cases, where he himself has removed he appendages in cases of mollities, the results have been excellent. In six of these ases the patients had not borne a child for t least two years before operation, yet the lisease was making active progress, and preenting the patient from working for her read or enjoying life. In most of the cases he arrest of the mollities was very rapid, in he remainder improvement set in slowly, but continued steadily after operation. These results, in Dr. Fehling's opinion, appear to justify the theory that it is the suppression of the functions of the ovaries that brings about : cure of mollities after the extirpation of se organs. Why such a phenomenon should occur, Dr. Fehling does not explain; but, if his theory be correct, we have a new physiological truth of great importance. The bones, in respect to their red marrow, are known to be blood-organs; now, it appears that the ovaries are, at least under certain conditions, bone-controlling organs.—*British Medical Journal*, July 28, 1890.

ARECOLINE, the volatile liquid alkaloid of the areca-nut, principally affects the heart. It is excreted unchanged.—*Western Druggist*, July, 1890.

SALOL COLLODION.

It is recommended in the *Répertoire de Pharmacie* for July 10, 1890, to dissolve 4 parts of salol in 4 parts of ether, and then add to 30 parts of collodion, and it is stated that the application of the salol collodion to the affected parts in acute rheumatism will be followed by rapid relief of pain.

SOLVENTS FOR CAMPHOR.

According to SAZEAU, the addition to camphor of ether or alcohol increases the quantity which chloroform is capable of dissolving. To this Hoffer adds that olive oil saturated with camphor will dissolve six times as much as iodoform.—*Pharmaceutical Journal and Transactions*, June 28, 1890.

TABLE DENOTING THE NUMBER OF DROPS CONTAINED IN A GRAMME.

In view of the agitation in favor of the adoption of the metric system in pharmacology, and the certainty of its ultimate acceptance, the following table, showing the number of drops of various drugs contained in a gramme will, therefore, be of value:

Acid, acetic, dilute, 20.7.
Acid, bromhydric, 13.8.
Acid, carbolic, liquid, 27.4.
Acid, hydrochloric, 14.6.
Acid, lactic, 24.6.
Acid, nitric, 16.
Acid, phosphoric, 13.2.
Acid, sulphuric, dilute (1 : 5), 14 5
Alcohol, absolute, 39.8.
Alcohol, dilute, 30.1.
Alcohol, nitroso ether, 37.2.
Amyl, nitrite of, 41.4.
Bitter-almond water, 21.5.

Chlorine water, 14.9.
Chloroform, 35.5.
Creolin, 29.1.
Creosote, 26.2.
Ether, acetic, 40.8.
Ether, sulphuric, 51.3.
Ethylene, chloride of, 31.7.
Essence of eucalyptus, 33.7.
Essence of peppermint, 32.6.
Essence of turpentine, rectified, 33.7.
Extract of belladonna, solution of, 27.9.
Extract of cascara sagrada, fluid, 29.8.
Extract of hyosciamine, 33.8.
Oil of almonds, ethereal, 22.5.
Oil of cloves, 28.6.
Oil of croton, 30.8.
Oil of mustard, ethereal, 29.2.
Hypnone, acetophenone, 23.4.
Ichthyol, 30 2.
Mercury, peptonate of, 14.8.
Mercury, solution of formamide of, 13.
Paraldehyde, 36.7.
Quinoline, 21.6.
Solution of acetate of ammonium, 30.2.
Solution of ammonia, simple caustic, 15.5.
Solution of iron, acetate, 16.7.
Solution of iron, perchloride, 13.6.
Solution of iron, potassic arsenite, 18.8.
Solution of lead, subacetate, 13.5.
Tincture of aconite, 35.1.
Tincture of benzoin, 36.8.
Tincture of cascara sagrada, 29.6.
Tincture of castor canadensis, 36.2.
Tincture of colchicum, 35.1.
Tincture of digitalis, 34.
Tincture of hellebore, 32.7.
Tincture of iodine, 39.2.
Tincture of ipecac, 34.4.
Tincture of iron, acetate (ethereal), 28.3.
Tincture of iron, maltate, 19.6.
Tincture of musk, 29.6.
Tincture of nux vomica, 34.6.
Tincture of opium, benzoic, 33.4.
Tincture of opium, simple, 28.4.
Tincture of quebracho, 34.5.
Tincture of quinine, compound, 33.1.
Tincture of strophanthus, 34.8.
Tincture of valerian, 31.4.
Water, 13.6.
Wine of antimony, 29.6.
Wine of ipecac, 22.9.

—*Journal de Médecine de Paris*, June 22, 1890.

HYDRACETIN.

Dr. E. Basch has carried out some observations on the use of hydracetin in skin-diseases, and finds himself unable to agree at all fully with the laudatory accounts which have been given of its action by some other observers. He finds that it is decidedly poisonous, even when applied externally. In a case of general psoriasis, where a ten per cent. ointment was applied to a third of the surface of the body, after ten days' treatment the skin and mucous membranes became quite pale, and though the hydracetin was then stopped, hæmoglobinuria and jaundice supervened. The pulse became very rapid; but notwithstanding the constitutional action of the drug, the psoriasis was not benefited. Dr. Basch finds that hydracetin, though a powerful reducing agent, and useful in small patches and limited areas of psoriasis, has by no means the specific effect that pyrogallol and chrysarobin seem to possess.—*Lancet*, July 5, 1890.

DIOSCOREA VILLOSA.

In a letter to the *Medical Bulletin* for July 1890, Dr. Thomas M. Woodson writes the examination of a remedy sold by a travelling irregular physician for the relief of biliary colic, which had proved to be remarkably successful for this purpose, showed that the principal constituent was dioscorea villosa, and on acting on this information Dr. Woodson writes that he has treated several cases of biliary colic with this remedy, and ordinarily with striking relief.

He appends the following formulæ for its use:

NO. 1.

℞ Subnitrate of bismuth, ʒiii;
Fluid ext. dioscorea villosa,
Camph. tr. opii, āā ʒss;
Tr. ginger, q.s. ad ʒiii.

Sig.—One teaspoonful every hour until relieved during paroxysms.

During the interim, to prevent the attack use—

NO. 2.

℞ Tr. ferri mur., ʒiiss;
Subnit. bismuth, ʒiv;
Fluid ext. dioscorea villosa, ʒiii;
Liquid pepsin, q.s. ad ʒiii.

Sig.—One teaspoonful after eating, three times a day.

Dr. Woodson adds that he has used the following with satisfaction in those cases of indigestion attended with pain, torpid bowels, etc., which we frequently encounter:

℞ Fluid ext. dioscorea villosa, ʒi;
Fluid ext. cascara sagrada, ʒss;
Tr. nux vomica, ʒii;
Fluid ext. taraxacum, q.s. ad ʒiv.

Sig.—One teaspoonful two or three times a day.

It would seem that the dioscorea is a valuable remedy in numerous cases of digestive troubles, and worthy of more extended use by the profession.

—THE—

Therapeutic Gazette.

Whole Series, Vol. XIV. | DETROIT, MICH., PHILADELPHIA, PA., | September 15, 1890. | Third Series, Vol. VI. No. 9.

CONTENTS.

Original Communications.

PAGE

On the Treatment of Affections of the Stomach. By Professor Dujardin-Beaumetz..... 577

A Research to determine the Action of Nitrous Oxide, Nitrogen, Oxygen, and Carbonic Acid upon the Circulation, with Especial Reference to Nitrous Oxide Anæsthesia. Part II. By H. C. Wood, M.D., and David Cerna, M.D..... 583

The Values, Relations, and Dangers of the Anæsthetics (concluded). By G. Archie Stockwell, M.D., F.Z.S..... 589

The Treatment of the Morphine-Disease. By J. B. Mattison, M.D..... 599

Cactus Grandiflorus in Heart-Disease. By J. E. Engstad, M.D..... 606

Leading Articles.

Death of Dr. William Brodie..... 608

Diuretic Properties of the Elder (Sambucus Nigra)..... 609

Some New Remedies for Whooping-Cough..... 610

Orexin Again..... 611

The Treatment of Chronic Bright's Disease..... 612

Reports on Therapeutic Progress.

Bromoform in Whooping-Cough..... 607

The Excretion of Balsams in the Urine 614

PAGE

Susceptibility to the External Employment of Tannic Acid..... 616

Pilocarpine as an Antagonist to Belladonna..... 617

The Treatment of Syphilis by Subcutaneous Injection of Mercurial Preparations..... 617

Sugar in the Blood..... 618

Ichthyol in Diseases of Women..... 619

Thallin in Typhoid Fever..... 619

Observations on the Proportions of the Chief Proteids occurring in the Urine in Various Forms of Albuminuria..... 620

Coto Bark and Cotoine in the Treatment of Diarrhœa..... 620

Topical Action of Drugs on Secretion... 621

Salicylate of Theobromine..... 621

Excision of the Optic Nerve and Avoidance of Enucleation..... 621

The Chemistry of the Gastric Juice as an Element in Diagnosis and Therapeutic Indication..... 622

The Excretion of Mercury in Relation to the Various Methods of its Employment..... 623

The Value of the Different Hypnotics.. 623

Tracheal Injections as a Mode of Medication..... 629

A Procedure for washing out the Male Bladder without the Use of a Catheter 629

The Surgical Treatment of Tuberculosis of the Pleura and Lung..... 630

Eczema from the Use of Creolin..... 631

PAGE

Creosote in Phthisis..... 632

Iodosulphate of Cinchonine..... 632

Antiseptic Curetting of the Uterus in Puerperal Endometritis..... 633

Paraguay Tea..... 633

Treatment of Diphtheria by Inoculation with the Microbes of Erysipelas..... 635

Reviews..... 635

Correspondence.

Paris Letter..... 638

Berlin Letter..... 641

Notes and Queries.

Disinfection by Fumes of Burning Sulphur..... 643

The Dose of the Alkaloids of Hyoscyamus..... 644

Bleaching Teeth..... 645

The Chemistry and Physiological Action of Phosphorous Oxide..... 646

Nitroglycerin in Asthma..... 647

For the Relief of Earache..... 647

Thiol in Skin-Diseases..... 647

The Treatment of Croup..... 647

The Effect of Oil and other Substances on the Secretion of Bile..... 647

The Action of Mono- and Bichloral Antipyrin..... 648

Injections of Ether for Neuralgia..... 648

Otorrhœa Pellets..... 648

Anæsthetic Mixtures..... 648

Original Communications.

*ON THE TREATMENT OF AFFECTIONS OF THE STOMACH.**

LECTURE II.—ON THE NEW MEANS OF EXPLORATION OF THE DIGESTIVE FUNCTIONS.

BY PROFESSOR DUJARDIN-BEAUMETZ,† PARIS, FRANCE.

GENTLEMEN:—I desire to devote this lecture to the study of the new means of investigation which enable us to obtain a truly clinical appreciation of the processes of gastric digestion in health and disease; then we shall examine the prognostic value and utility which therapeutics may derive from these studies in the treatment of gastric affections.

In this undertaking I shall be guided not only by works published in Germany, but also by two remarkable theses, the one defended at Paris by an *interne* of the hospitals, Dr. Gaston Lyon,‡ the other having for its author a pupil of the faculty of Nancy, Dr. Georges;§ and, lastly, I have to own my

* From advance sheets, revised by the author (translated by E. P. Hurd, M.D.). Lectures delivered in Cochin Hospital, Paris, France.

† Member of the Academy of Medicine, Physician to Cochin Hospital, Paris, France.

‡ G. Lyon, "L'Analyse du Suc Gastrique" (*Thèse de Paris*, 189c).

§ L. Georges, "De l'Étude Chimique du Contenu Stomacal" (*Thèse de Paris*, 1890).

indebtedness to a review which has appeared in my own journal, the *Bulletin Général de Thérapeutique*, and which was written by Dr. Paul Cheron.*

The digestive functions consist of two distinct processes. The one, a physical act, pertains to the movements which the muscular coat of the stomach communicates to the aliments introduced, bringing them into contact with the different points of the mucosa, then causing them to pass into the intestine. The other is a chemical act, whose end is to subject the aliments, and in particular the albuminoids, to a special modification, which renders them assimilable.

Which of these two processes is of the most consequence? According to some physiologists, the chemical act is much more important than the physical act. This is by no means the case, gentlemen, and if you could imagine a stomach without muscular contraction, digestion would be impossible; while, on the contrary (as I shall show you by and by), by virtue of the functions of the pancreas, life is compatible with a stomach almost devoid of gastric juice. But in reality these two acts are necessary, and the one completes the other; so every modification affecting either the one or the other of these acts will have for its consequence a modification in the gastric digestion, and may be the starting-point of functional troubles, to which has been given the name of *dyspepsia*.

As you see, I reject the exclusive opinion of Professor G. Sée, who regards dyspepsia as always chemical in its origin.

We shall, then, have to examine successively the new means of investigation which enable us to understand the modifications which may take place in the physical and chemical acts of digestion. But before taking up this study, I deem it important to sum up briefly what physiology has taught us the last few years respecting the movements of the stomach and respecting the gastric juice.

Described for the first time by Helvetius, the muscular fibres of the stomach constitute in man, as you know, three layers,—one of longitudinal, one of circular, and one of elliptical fibres. By their contractions these fibres impart to the stomach certain movements, which have been well studied the last few years by Schiff, Laborde, Hoffmeister, and Schultze.

Schiff maintained that these movements only take place during the digestive act. According to him, the movements consist in a simple corrugation or wrinkling of the surface of the stomach. These movements, more active towards the median part of the stomach, divide the greater curvature into two parts. Moreover, Schiff adopts the view of Beaumont, who maintained that these movements have for their object to cause the alimentary bolus to undergo certain revolutions, which bring it in contact with all points of the mucosa.

This notion of the circular movements has been combated by Laborde, who had the advantage over all his predecessors of examining the human stomach; he operated, in fact, on the digestive organs of criminals a few minutes after their death.

According to him, the movements take place from the cardia to the pylorus, and from the pylorus to the cardia. Moreover, by its contractions, the stomach is divided into two pouches: the one, more voluminous than the other, corresponds to the great cul-de-sac and the greater curvature; the other, to the lesser curvature. Owing to this arrangement, liquids may pass almost directly from the cardia to the pylorus by following the lesser curvature.

This disposition has been confirmed in the dog by Hoffmeister and Schultze, who compare the contracted stomach to an hour-glass, with a large swelling corresponding to the cardia and a small one corresponding to the pylorus. It is in the large swelling that the chemical acts of digestion take place. But these experiments have not the value of those of Laborde, because, as Collin has remarked, each animal species has special stomachal contractions, and we cannot, from comparison with the contractions in animals, form conclusions as to the mode of contractions in man.

We can, moreover, without resorting to experiments and without laying the stomach bare by dissection, examine these contractions clinically. In fact, in patients affected with dilatation of the stomach, with thickening of the muscular wall, these movements of the stomach are very clearly perceived, and you have only to apply cold in order to see them. You will then witness a wavy movement of the gastric walls, affecting alternately the greater tuberosity, then the pyloric region; and while the one lets itself become distended, the other contracts; thus there are formed elevations and depressions quite

* Paul Cheron, "On the Chemical Alterations of the Gastric Juice and their Treatment" (*Bull. Gén. de Thér.*, t. cxviii. pp. 145, 215, 264).

appreciable to the naked eye. These movements present a real alternation, comparable in a certain measure to what takes place in the auricles and ventricles of the heart, and thus you have a rhythm of the stomach as well as a rhythm of the heart.

Much more complex is the study of the gastric juice, and you will see that, notwithstanding the numerous works that have been written on this subject, there remain still many obscure points connected with this question.

I need not recall to your minds the structure of the gastric mucous membrane, or of the glands whose secretion constitutes its principal function. I must, however, tell you that the view of Kölliker, that there is an abrupt line of demarkation between the pepsin glands occupying the great cul-de-sac of the stomach and the mucous glands surrounding the pylorus, is no longer tenable; and since the labors of Haidenhain, Rollet, and Ebstein, it is now known that there is an intermediary zone, where there are both mucous glands and pepsin glands.

If there seems to be agreement respecting the mucous glands, which are characterized solely by superficial cells, there is not the same agreement respecting the pepsin glands, which contain at the same time voluminous cells with large nuclei, and certain cells surrounding the orifice of the glands, and which are called *border cells*. In fact, some have maintained that the principal cells (or the large cells) secrete exclusively the gastric juice; others affirm that this *rôle* belongs exclusively to the border cells. Lastly, there is a third doctrine, which affirms that the gastric juice is secreted both by the border cells and the large cells. I pass now to the study of the gastric juice.

That which characterizes essentially the gastric juice is its extreme acidity. This is one of the most striking facts connected with this secretion. There has been much discussion as to the nature of the acid, some maintaining that it is lactic, others hydrochloric acid.

To-day there is general agreement as to the following facts: There exist in the normal state in the gastric juice lactic acid and hydrochloric acid; but the lactic acid is always the product of digestion, while the hydrochloric acid is the acid of the gastric juice, and appears in this secretion at the moment of the entrance of the food into the stomach. The researches of Ewald are in this respect absolutely demonstrative.

I do not speak of the opinion of Poulet, of Plancher-les-Mines, who has insisted that this acid is hippuric; this view is not held by any physiologist. So, then, hydrochloric acid is the normal acid of the gastric juice. Is it free or is it combined with other products? Here widely-diverging views have been put forth.

Ewald, as well as Hayem, has maintained that the acid is not free, and that it is combined with the various albuminoid substances which are in contact with it. At the same time, Ewald rejects the hypothesis of Richet, —viz., that the hydrochloric acid is combined with leucin, this substance, like tyrosin, being always a product of the decomposition of the ingesta.

Hayem,* in continuing his interesting researches with Winter on the stomachal chemism in the normal and pathological states, thinks that the hydrochloric acid is combined with albumen in the gastric juice in the state of hydrochlorate of the amide acids. These amide acids result from a breaking up of the primitive albuminoid molecule.

It has also been a matter of dispute whether the stomach when empty secretes gastric juice, and Peck affirms that this secretion ceases during fasting, or is so much diminished that it may be considered as *nil*.

Besides the hydrochloric acid, the gastric juice contains two ferments,—pepsin and the lab-ferment, or pexine. I shall say but little about pepsin. We know that it transforms albuminoids into peptones, but despite numerous researches made on this subject, we are ignorant of the true nature of these peptones. We know only that to each kind of albumen correspond special peptones, and, since the researches of Heninger, there is pretty general agreement in considering these peptones as hydrates of albuminoid matters.

The lab-ferment or pexine is a substance which causes the coagulation of milk, and those of you who would like to know more about this pexine would do well to consult the thesis of Dr. Pagès.†

The new microbial theories, for which we are so largely indebted to Pasteur, have but little modified our notions as to these two ferments,—pepsin and pexine. If Duclaux and Vignal have shown that the buccal cavity contains a great number of microbes, whose effect is to peptonize albuminoids, Dastre, on the other hand, has demonstrated that by sterilizing gastric juice, we do not destroy,

* Hayem and Winter, "Researches on the Stomachal Chemism in the Normal and in the Pathological State" (*Bull. Méd.*, 1889).

† "Researches on Pexine" (*Thèse de Paris*, 1888).

though we attenuate, its digestive power considerably, so that we are warranted in saying that certain microbes are favorable to peptonization.

As for the origin both of the acid and of the ferment of the gastric juice all is obscurity. The old theory of peptogenous substances, so much in vogue several years ago, seems to be abandoned, and there is a general admission that the stomach does not directly form pepsin, but a body called *pepsinogen* or *propepsin*, which then transforms itself into pepsin.

As for the hydrochloric acid, it is believed to come from the decomposition of the chlorides contained in the blood, and the recent researches of Professor Hayem tend to justify this view.

After these preliminary observations, I come to the study of the new processes which enable us to understand both the movements of the stomach and the chemism of this organ. Let us begin with the methods of investigating the movements of the stomach.

I have just told you that we may in certain cases observe *de visu* the movements of the stomach through the abdominal walls. But these are only exceptional cases, and to judge of the contractility of the stomach we must make use of processes more or less complex; the most simple and advantageous is most certainly that of Leube.

Basing himself on physiological data, Leube maintains that seven hours after a normal meal the stomach, in the healthy state, should be entirely empty. It is sufficient then to give to the patient a meal of meat, eggs, and bread, then to practice lavage of the stomach seven hours after this meal, and you will find the stomach devoid of food.

Klemperer has proposed a process derived from the same method, but much more complex. It is called the *oil process*. It is based on this fact, that, in the physiological state, seventy to eighty grammes of oil pass from the stomach into the intestine in two hours. The operator then introduces, by the aid of the œsophageal sound, one hundred grammes of oil; then, with the stomach-pump, he aspirates, at the end of two hours, the contents of the stomach. The stomach is next washed out with water, which is allowed to settle, the oil is dissolved out by ether, and a calculation is made of how much oil has passed into the intestine. This is a process which is much more complicated than that of Leube, and does not seem to present any advantage over the latter.

The third means is based on chemical reactions. There is a substance to-day very much used in surgery,—salol,—which results from the combination of salicylic acid with phenic acid. One of my pupils, Dr. Lombard, has shown all the therapeutic applications which may be made with salol.*

This body in the presence of alkalies is decomposed into phenic acid and salicylic acid. Ewald has utilized this property in order to determine the contractility of the stomach. He administers 1 gramme of salol to the patient, and examines the urine to find at what moment salicylic, or rather salicyluric, acid appears in that secretion. In the normal state this acid makes its appearance at the end of half or three-quarters of an hour. When there is a delay, Ewald affirms that this is due to the fact that the stomach, through sheer inactivity, has not let its contents pass into the intestine.

Certain objections may be made to this test. In a thesis which bore a prize from the faculty, and which was written by one of my best pupils, Mlle. Dr. Chopin,† it appears that the elimination of salicylic acid depends in great part on the condition of the kidney, and it may be considerably retarded in old people. On the other hand, it depends on the nature of the meal, and especially on the nature of the liquid ingested. We may cause the appearance of the salicylic acid to vary considerably, as Bourget has shown.

The same objections may be made to the modifications of Ewald's method proposed by Hubert, who examines the urine not only to ascertain at what moment the salicylic acid appears there, but also to find out the time when the reaction disappears, a period quite remote from that of the ingestion of food in persons with inactive stomachs.

Hence I am disposed to make little account of these chemical processes, and adhere exclusively to the method of Leube. I come now to the clinical means put in use for the study of the gastric juice.

All these clinical means are exclusively based on the employ of the stomach siphon, furnished or not with a pump to aspirate the liquid from the stomach. I have already in my "Alimentary Hygiene" set forth the processes heretofore employed to obtain gastric juice.‡ All these processes are aban-

* Lombard, *Thèse de Paris*, 1887.

† G. Chopin, "On the Elimination of Salicylic Acid" (*Thèse de Paris*, 1889).

‡ Dujardin-Beaumetz, "Hygiène Alimentaire," 1887, p. 201.

doned save that of the pump, which is Collin's invention, and is a model of its kind. When you have no pump, you can use the simple stomach-tube, making a siphon of it. But before endeavoring to collect the gastric juice, it is necessary to give the patient a repast, called the *trial meal.*

Many trial meals have been recommended. Thus Riegel, Gluzinski, Jaworski, Boas, Ewald, Ritter, Hirsch, and Professor Sée have each proposed a trial meal.

From a clinical point of view, two only need be retained, that of Ewald and G. Sée. That of Ewald is almost exclusively employed in Germany, where it bears the name of *probefrühstück.* It consists of a little white bread, weighing thirty-five grammes (about an ounce), of a tumbler and a half (three hundred grammes) of water, or of light tea, without milk or sugar. This meal is given in the morning, on an empty stomach, and the gastric juice is examined one hour after the ingestion of the food.

Sée gives a meal which is more complex, composed of meat (sixty to eighty grammes) hashed very fine, of white bread (one hundred to one hundred and fifty grammes), and of a glass of water. He recommends to the patient a prolonged mastication. The examination of the gastric juice is made two hours after the ingestion of this meal.

Georges maintains that this meal gives rise to the production of lactic acid. Hence he prefers Ewald's test meal, to which he adds two eggs in the shell. It is well understood that the aspiration made with the pump should not be too energetic, and it suffices to obtain from twenty to twenty-five cubic centimetres of gastric juice in order to practise the examination. The gastric juice is filtered, then is acted upon by the reagents, of which I will now speak.

Almost all these tests (if not all) are based on the modification which the hydrochloric acid effects in the divers coloring materials obtained from coal tar, and I will begin by the reagent which has been longest in use,—methyl violet.

It was Laborde and Dusart,* who, in 1874, sixteen years ago, were the first to propose methyl violet for the study of the modifications of the gastric juice. It is true that they applied it rather to physiological than to clinical studies. Since then Maly has taken up again the method of Laborde, and in 1887 applied it to practical use.†

To apply this test you thus proceed:

Into fifty cubic centimetres of water let fall three or four drops of methyl violet, called *Paris violet;* then pour into the solution the gastric juice which you are to examine, and if hydrochloric acid be present, the violet will turn to deep blue. An amount of hydrochloric acid equal to .5 per thousand is needed to produce this reaction.

Lactic acid also gives the same coloration, but it must be very concentrated (at least ten per cent.). The presence of peptones, in the proportion of four per cent., prevents the reaction from taking place, even when hydrochloric acid exists to the extent of one per thousand in the solution.

---

* Laborde, "The Coloring Matters applied to the Research and Determination of the Free Acid of the Gastric Juice" (*Bulletin Général de Thérapeutique,* t. cxii. p. 86, 1889).

† Richard Maly, "Untersuchungen über die Mittel zur Säure Bildung in Organismus und über einige Verhältnisse der Blutserum" (*Zeitschrift für Physiologische Chemie,* t. i. p. 174, 1887).

The second process is that of tropœoline, recommended by Leube, and in 1884 I published several articles, making known the advantages which may be obtained from this test.*

This is the way to test gastric juice by tropœoline, or the Poirrier Orange, No. 4: Into a watch-glass, placed on a white piece of paper, or other white surface, you pour one of the following solutions, either a small quantity of an aqueous solution of tropœoline, one per cent., or of an alcoholic solution, containing 1 part of alcohol to 3 parts of distilled water, with enough tropœoline to make a centesimal solution; then to the liquid in the watch-glass you add a part of the gastric juice to be examined, and if there be hydrochloric acid present, the liquid assumes a very characteristic carmine-red color, which is in striking contrast with the normal yellow color of the tropœoline solution.

Like the methyl violet, this reaction may also be obtained with lactic acid, but a large proportion is needed,—as much as two per thousand; this test is very sensitive, and is but little influenced by peptones. Hence it is that Georges places it at the head of the tests to be employed.

It is also on a change of color that the tests with Congo red and "brilliant green" are based. In applying the first reagent, test-papers saturated with the pigment (or a solution of the pigment) may be used; these, under the influence of hydrochloric acid, pass from a clear red to a blue color. To obtain this reaction, one milligramme per thousand of hydrochloric acid is sufficient. There would be required as much as 1.20 grammes per thousand of lactic acid in order to give the same reaction. Georges regards this as an excellent test.

The "brilliant green" test was proposed by Professor Lépine. He makes use of a two per cent. solution, and the presence of the acid makes the mixture pass from a greenish blue to a deep green. The inconvenience lies in the difficulty of appreciating the passage from a greenish blue to green.

Lastly, Gunzburg's test, especially vaunted by Germain Sée and his pupils, is the most sensitive of all. It will reveal the presence of one-twentieth per thousand of hydrochloric acid, only the process is quite complex, and heat is needed in order to bring out the reaction; so that this test is not so well adapted for clinical test as some others. This is the composition of this reagent:

℞ Phloro-glucine, 2 grammes;
Vaniline, 1 gramme;
Alcohol at 80°, 100 grammes. M.

This solution is of a reddish-yellow color.

Into a porcelain capsule you will put ten or twelve drops of the gastric juice to be examined, and add three or four drops of the reagent. Then you will heat the mixture slightly, taking care not to raise the temperature above 38° to 40° C.; there will then appear along the borders of the capsule a cinnabar-red coloration.

If this reagent is extremely sensitive, it presents the serious disadvantage that its reactions are masked by the peptones and albuminoid bodies, hence I think that we should trust chiefly to the tropœoline and methyl violet tests, and only make use of the Gunzburg test in exceptional cases.

In certain circumstances it is desirable to test for lactic acid. For this there is but one reagent,—viz., that proposed by Uffelmann. The solution must be extemporized for the occasion, according to Lyon's recommendation. Drop into a mixture of twenty cubic centimetres of distilled water and ten cubic centimetres of phenic acid (four per cent.), two or three drops of the *liquor ferri perchloridi*. The mixture takes on an amethyst hue, which turns to bright yellow in presence of lactic acid.

There remains yet the process for testing the acidity of the gastric juice. I shall not speak of the methods of Leon and of Winter, which are laboratory methods, and shall only mention the clinical processes. The following is a convenient method: Take ten cubic centimetres of gastric juice, and add a few drops of a solution of phenol-phtaleine, which has the property of changing to a lively red in the presence of a free alkali. Then add, drop by drop, a standard solution of soda,—one-tenth,—and make your calculation on the basis that one cubic centimetre of the solution neutralizes .003646 of HCl. In the normal state it takes from four to six cubic centimetres of this decimal solution of soda to produce the reaction.

Lastly, it is well to test the digestive power of the gastric juice by practising with it artificial digestions. For this purpose, you will put into a test-tube five cubic centimetres of

* Dujardin-Beaumetz, "On the Diagnostic Value of the Processes for the Recognition of the Acidity of the Gastric Juice" (*Société Médicale des Hôpitaux*, December, 1884, and *Gazette Hebdomadaire*, December 4, 1884, p. 804).

gastric juice and a little block of albumen,—from five to six millimetres square. Place the whole in a stove, and expose it to a temperature of 38° to 40° C. You may make at the same time, for purposes of comparison, artificial digestions by the aid of pepsin.

But, in order to give you an idea of the minutiæ of the processes employed in Germany to test the digestive power of the gastric juice, allow me to quote the method counselled by Gunzburg to ascertain the chemical power of the stomach. This method is based on the presence of iodide of potassium in the saliva, when this salt has been absorbed into the circulation.

Gunzburg takes a pastille of iodide of potassium, and encloses it in an envelope of caoutchouc, which is closed by means of threads of fibrin that have been preserved in alcohol. These little pastilles are dipped into glycerin; then one of them is taken and placed in a gelatin capsule, and the patient is made to swallow it. Then the saliva of the patient is examined, and the moment noted when the presence of iodine is revealed by the starch test. By the time which has elapsed, one is able to decide as to the digestive value of the gastric juice, for this fluid must first destroy the threads of fibrin before the pastilles of iodide of potassium are set free.

I do not know whether the method of Gunzburg is much employed in Germany, but it must be admitted that in France it is really impracticable. It must be confessed, in fact, that the patient and the physician will need a great deal of patience in order to subject for several hours, and from moment to moment, the saliva of the patient to a chemical examination which shall reveal the presence of iodine, and when the iodine is detected, nothing is solved thereby, for the pastille may have passed into the intestine before its threads are dissolved. Therefore, I think that it is just as well to reject these too complicated methods, which belong rather to the laboratory than to the department of clinical medicine.

You are now in possession of three orders of means which will enable you to detect the presence of free hydrochloric acid, the presence of lactic acid, the acid value of the gastric juice, and, lastly, its digestive power.

With all these methods, can you dispense with the clinical examination, and on these data alone establish your diagnosis and your therapeutics?

No, gentlemen; and when you come to realize all the time and pains and care which these chemical researches necessitate, and the meagre results which they bring, you will be tempted to say that the mountain has labored and brought forth a mouse. In fact, as Georges has well said, the diseases of the stomach, from a chemical point of view, group themselves into two classes,—those where there is hypersecretion of hydrochloric acid, and those where there is hyposecretion.

In the first group there is but one disease,—viz., simple ulceration of the stomach; in the second are grouped all the other affections,—gastritis, dilatation of the stomach; in a word, affections the most widely different. Hence, Hayem, in his recent researches, has shown that the presence of free hydrochloric acid does not enable one to decide respecting the diagnosis of the affections of the stomach, since its presence is an exceptional fact.

Do I mean by this that we must abandon these researches? By no means. These researches furnish us a complement of information which enables us to confirm, in a certain measure, the diagnosis to which we may have arrived by the other and really chemical means. But it is always the latter which should have the first place, and the study of the treatment of the divers diseases into which I am about to enter will be an absolute proof of what I maintain, and this proof I shall endeavor to make as complete as possible when I take up, as I intend to do in the next lecture, with the help of all the new light of modern research, the consideration of cancer of the stomach and its treatment.

A RESEARCH TO DETERMINE THE ACTION OF NITROUS OXIDE, NITROGEN, OXYGEN, AND CARBONIC ACID UPON THE CIRCULATION,

WITH ESPECIAL REFERENCE TO NITROUS OXIDE ANÆSTHESIA.

By H. C. Wood, M.D., assisted by David Cerna, M.D., Philadelphia, Pa.

(Continued from page 515.)

Part II.

The first series of experiments in the second part of this research was made to determine the effect in the inhalation of oxygen upon the pulse and arterial pressure.

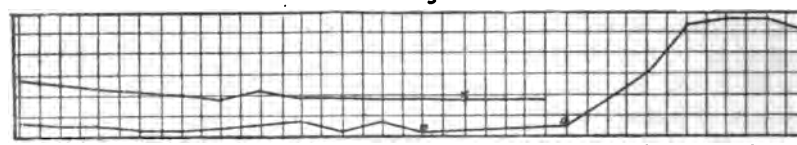
In the first of these experiments (Experiment 12), after the inhalation of pure oxygen gas for two minutes, the pulse was four beats

per minute below its starting-point, and the arterial pressure three millimetres below its starting level. In Experiment 13 the pulse, at the end of four minutes of inhalation, had been reduced eight beats, while the blood-pressure had fallen four millimetres. That even this slight fall of pulse and blood-pressure was not directly the outcome of the action of the oxygen, but was due to indeterminable circumstances, is shown by the fact that, the inhalation being continued, one minute and forty seconds later the pulse was two beats per minute more than at the start, while at the end of the two minutes and forty seconds the pressure was one millimetre above its original place. In Experiment 3 the pulse, after three and a half minutes of inhalation, was three beats per minute higher than at the start, and the blood-pressure two millimetres.

to rest for ten minutes; after this it was given a second inhalation of the gas, which was followed by a slight rise of the pressure, so that in thirty seconds, when the reflexes were gone, the arterial pressure was seven millimetres above the norm; then the pressure dropped rapidly,—in fifteen seconds twenty-two millimetres, in thirty seconds forty-eight millimetres; then for a few seconds it remained steady, but soon recommenced to fall, and in one minute and fifty-five seconds after the beginning of the inhalation had reached almost to the zero line; fifteen seconds later the animal was dead.

In Experiment 15, with pure carbonic acid, the inhalation of the gas was followed by an immediate, rapid, and steady fall of the arterial pressure, which reached its maximum in a minute and a half; after this time the pressure

FIG. 5.



OXYGEN.—Curve showing the changes in the blood-pressure during two prolonged inhalations of pure oxygen. The sudden rise in the pressure at the end of the second line was due to a mechanical arrest of respiration.

These experiments certainly show that the inhalation of pure oxygen gas has no influence upon the circulation, and would seem to warrant the conclusion that oxygen gas has no direct influence upon the circulation, and that, therefore, the fall of pressure produced by excessively rapid and forced respiration is the result of the pumping out of the blood of carbonic acid, rather than of any increase in the oxygen of the blood, while the rise of the arterial pressure in asphyxia is due to the presence in the blood of an excess of carbonic acid.

The conclusion just reached naturally led up to a direct experimental study of the effect of carbonic acid upon the arterial pressure. In carrying out such study we have made several series of experiments.

In the first series the animal was made to breathe *pure* carbonic acid. In the first experiment (Experiment 14) the reflexes were completely abolished in thirty seconds; the arterial pressure fell in fifteen seconds twelve millimetres, remained at about this point for fifteen seconds longer, when it slowly began to rise, and in fifty seconds more was five millimetres above its norm; it then rapidly fell again, so that in thirty seconds later it was sixty millimetres below the norm. The animal was then allowed to recover consciousness and began to rise, but failed to reach its norm during the inhalation. In this experiment it was evident that the animal obtained some air mixed with the gas, for at the end of seven minutes the pressure was well maintained; the valve used in the mouth-piece was subsequently found to be leaky, and without doubt air passed through it during inhalation. The second inhalation was in this case followed by an immediate and rapid fall of pressure, zero being reached in about a minute and a half.

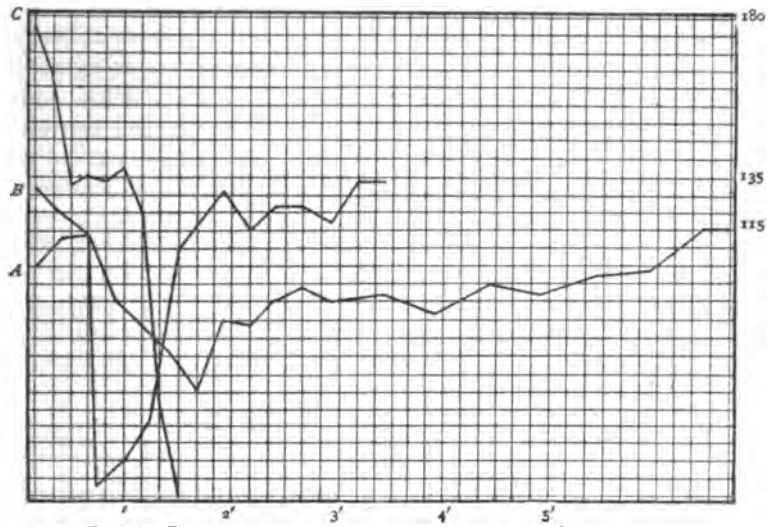
In Experiment 16 the conjunctival reflex was completely gone after thirty seconds of inhalation. The arterial pressure fell for thirty seconds, then rose to a little above the norm, but about a minute and a quarter after the beginning of the inhalation began to fall and rapidly lowered, so that one minute and forty-five seconds later it was about sixty millimetres below the norm. After ten minutes of consciousness a second inhalation was followed by complete abolition of reflexes in thirty seconds, and, after a brief primary rise by a steady but somewhat irregular fall of pressure, zero and death being reached in a little less than two minutes.

In order to give a better idea of these changes, Dr. Cerna has plotted them as given below.

In Fig. 6 the line *A* represents the first inhalation of Experiment 14, the second not being plotted; the line *B* represents the blood-pressure in the first inhalation of Experiment 15; *C*, the second inhalation.

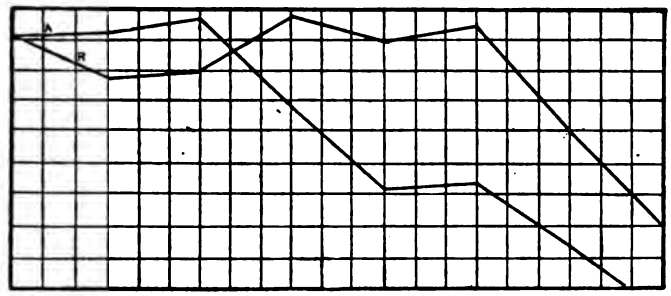
the inhalation. The result obtained in Experiment 18 was similar. In seventy seconds the pressure fell eighty millimetres, but after that it was nearly stationary, or even rose a little for fifty seconds, when it began again

FIG. 6.



CARBON DIOXIDE.—*A* represents first inhalation of Experiment 14; *B* represents first inhalation of Experiment 15; *C*, second inhalation.

FIG. 7.



EXPERIMENT 16.—*A* and *R* represent, respectively, first and second inhalations.

Figure 7 represents Experiment 16. *A* the first, *R* the second inhalation.

The tracings in these experiments vary so much as to indicate that in some of them air got in with the carbonic acid. We, therefore, made the following experiments with a mercurial valve, so arranged that leakage was impossible.

In Experiment 17 the inhalation of pure carbonic acid was followed by an immediate and progressive, although irregular, fall of the arterial pressure. In forty-five seconds the pressure was twenty-eight millimetres below the norm; in one minute, fifty-seven millimetres; in one minute and a quarter it was sixty-two millimetres; and in one minute and a half, one hundred and two millimetres below the norm. Death occurred one and three-quarter minutes after the beginning of the inhalation.

to slowly fall, and in twenty seconds more was one hundred and eight millimetres below the norm. Death occurred in one minute and a half after the beginning of the inhalation.

The effects of pure carbonic acid upon the arterial pressure are usually to lower it with more or less steadiness until death is attained. It has seemed to us very probable that diluted carbonic acid may increase arterial pressure, although, when in overwhelming amount, the gas depresses the pressure.

We have, therefore, made a series of experiments with carbonic acid diluted with known proportions of oxygen or air. The first of these two sets of experiments are those in which carbonic acid and oxygen were employed.

In Experiment 19 the inhaled gas contained

66.66 per cent. of carbonic acid and 33.33 per cent. of oxygen. The effect is shown in the following columns:

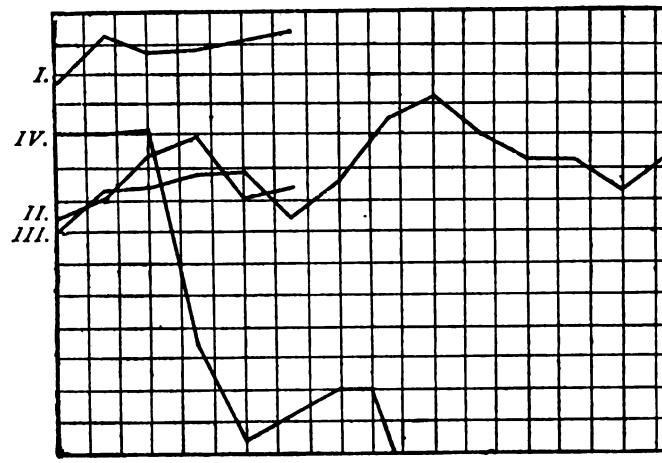
Beginning of inhalation.	Norm—N.
15 seconds.	N.
30 seconds.	N. + 10 m.
45 seconds.	N. + 6 "
1 minute.	N. + 31 "
1.30	N. + 52 "

In a second inhalation the arterial pressure rose in one and a quarter minutes to ten millimetres.

In Experiment 20 the first inhalation was made with a mixture containing sixty-four per cent. of oxygen and thirty-six per cent. of carbonic acid; in half a minute the pressure rose eleven millimetres, in one minute thirteen millimetres, in one minute and twenty seconds fourteen millimetres. In a second inhalation, a mixture containing 66.66 per cent. of oxygen and 33.33 per cent. of carbonic acid was used; in half a minute the arterial pressure rose twenty millimetres, but in half a minute more the pressure was only six millimetres above the norm. A third inhalation, after the animal had completely regained consciousness and had been allowed to rest fifteen minutes, was practised with the same mixture as was used just before. The result was a rise in thirty seconds of eleven millimetres, in one minute of eighteen millimetres, in one minute and a half of fourteen millimetres. The animal was then allowed to breathe air, but before consciousness was regained, violent convulsions, with great rise of the arterial pressure, occurred. After a rest of fifteen minutes an inhalation of pure carbonic acid was given; half a minute later the pressure was practically unchanged, but in the next fifteen seconds it fell sixty-five millimetres, and continued to fall irregularly, so that two minutes after the beginning of the inhalation it was one hundred and twenty-six millimetres below its starting-point; a few seconds after this death occurred.

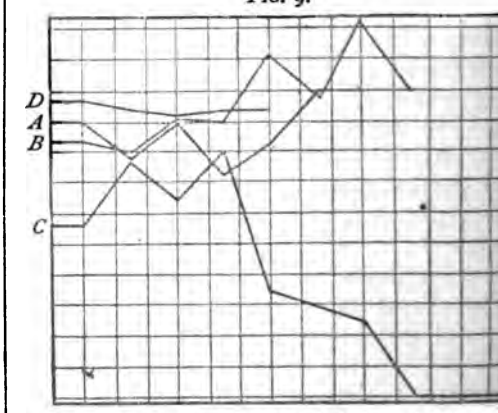
In Experiment 21 we administered by inhalation at first a mixture containing 66.66 per cent. of oxygen and thirty-three per cent. of CO_2. At the first trial the pressure rose in thirty seconds seven millimetres, in one minute twenty-six millimetres, in one and a half minutes thirty-eight millimetres, the rise not, however, being a steady one. Some minutes later a second inhalation failed to produce effect equal to that previously obtained; after thirty seconds the pressure was unchanged, and in

FIG. 8.



EXPERIMENT 20.—*I.*, inhalation, carbonic acid alone. *II.*, inhalation. *III.*, inhalation, each one-third oxygen. *IV.*, inhalation.

FIG. 9.



EXPERIMENT 21.—*A*, first inhalation of CO_2 + 3O. *B*, second inhalation of CO_2 + 2O. *C*, CO_2 alone, perhaps with a little O in it. *D*, O pure.

one minute it had only risen ten millimetres. After complete recovery from these inhalations the animal was given pure carbonic acid, and very shortly went into general convulsions, with great rise of pressure, followed by a rapid fall so soon as the convulsions ceased. Some time after the animal had regained its normal state it was made to inhale oxygen, the result being *nil* so far as the arterial pressure was concerned.

The experiments made with carbonic acid and air are two.

Experiment 22.—The mixture contained twenty-five per cent. of carbonic acid. The result was a slight rise of pressure, followed by a fall, as shown in the following columns:

Time.	Pressure.	
0	Norm.	Inhalation begun.
30	N. + 6	
1	N. + 16	
1.30	N. + 8	
2	N. + 10	

Experiment 23.—The mixture inhaled contained twenty per cent. of carbonic acid; in forty-five seconds pressure rose ten millimetres; in a second inhalation of the mixture, containing ten per cent. of carbonic acid, there was a rise, followed by fall, as shown in the following columns:

Time.	Pressure.	
0	Norm.	Inhalation begun.
30	N. + 7	
1	N. + 2	
1.30	N. + 2	
2	N. + 1	
2.30	N. + 2	

As a result of all our experiments upon the subject, we think that the following proposition is established: Carbonic acid, when breathed into the lungs alone, sometimes causes a slight and temporary rise in the arterial pressure, but usually at once, and always after a very short time produces a very decided fall of arterial pressure; carbonic acid, when taken properly diluted, distinctly increases the arterial pressure, apparently having the most power when mixed with oxygen in the proportion of two to one.

Though generally concordant, our results vary so much as to suggest that carbonic acid has a double action; that by stimulating the vaso-motor centre it acts to increase the pressure, while by inhibiting the heart it acts to lessen the pressure.

This naturally brings us to a study of the action of the gas upon the pulse.

The effect of C_2O upon the pulse is very pronounced.

Thus in Experiment 14 the pulse fell from 120 to 64, and in the second inhalation from 120 to 44; in the first inhalation the pressure being low, in the second high.

In Experiment 15 pulse fell from 120 to 36.

In Experiment 16 pulse fell from 135 to 40.

With mixture the effect was similar. In Experiment 20, C_2O, sixty-four per cent.; O, thirty-six per cent.; pulse fell from 140 to 62. In Experiment 21, C_2O, sixty-six per cent.; O, thirty-three per cent.; pulse fell from 156 to 44.

It must, therefore, be allowed that carbonic acid acts very powerfully as a pulse depressor.

The probabilities from the evidence already given are very strong that the rise of pressure and the fall of pulse are respectively due to stimulation of the vaso-motor and cardiac inhibitory centres, and to obtain positive knowledge we made the following experiments:

The first series of experiments were made upon dogs with vagi cut.

In Experiment 24, the pulse, after section of the pneumogastrics, when the inhalation was begun, was 156 per minute, and suffered no change from this rate for thirty seconds, when the respiration became stormy, and the enormous respiratory blood-curves so dominated the small pulse-waves that the latter cannot be counted in the tracing; thirty seconds later there was a rapid fall of the arterial pressure, accompanied by quick breathing and a return of the pulse to about 160.

In Experiment 25, both vagi being cut, the pulse before the inhalation was 120 to 140; ten seconds later it was unchanged; a few seconds after this there was developed a period of violent respiration, occasional respiratory curves of the pulse, with disappearance of the pulse-waves from the tracing. The dog was then allowed to recover consciousness. After the pulse had returned to its normal rate a second inhalation was given, which was followed in a very short time by the reappearance of enormous respiratory curves, and the disappearance from the tracing of individual pulse-beats. This condition continued until death, which occurred from failure of the heart.

In Experiment 26, the pulse, after section of the vagi, was 180. The inhalation of carbonic acid was followed by rapid fall of pressure, and twenty seconds afterwards the pulse was 200 and the pulse-wave excessively small; thirty seconds later the pulse was 120, but it subsequently fell, just before death, to 100.

In Experiment 27, the pulse, after the section of the vagi, was 189. Inhalations of

equal parts of air and carbonic acid were given, when the pulse rose in frequency, in half a minute being 240, and from this time varying during the continuance of the inhalation between 225 and 270. After this inhalation the animal was allowed to recover consciousness, and when the inhalation of pure carbonic acid was commenced the pulse was about 220; ten seconds later the respiratory curves so dominated the pulse-curves as to make the counting of the pulse-wave very difficult, but there seemed no change in the pulse. During the continuance of the inhalation, up to the time of death, the pulse-waves remained so minute that most of the time they could not be counted on the tracing, but fifty seconds after the commencement of the inhalation, the pressure being extremely low, the pulse was for a little while distinct enough to be counted at 200 a minute.

These experiments are substantially concordant in showing that, after section of the vagi, the inhalation of carbonic acid does not produce distinct slowing of the pulse. The contrast between the effects of the inhalation, without and with sections of the vagi, upon the pulse-wave is very great. Usually after the pure gas the individual pulse-wave in the animal is extraordinarily increased, while in the animal whose vagi has been cut, the pulse-wave, after the inhalation, becomes exceedingly small, or, in most cases, entirely obliterated.

In order to show this contrast, we append two tracings, both of them taken just before death, No. 1 with the vagi uninjured, No. 2 with the vagi cut.

pressure; which fall amounted, in twenty seconds, to eleven millimetres; in forty seconds, to forty-nine millimetres; in fifty seconds, to sixty-nine millimetres. Ten seconds later, exactly one minute after the commencement of the inhalation, the heart stopped, though respiration continued for several seconds.

In Experiment 29 (January 27, 1890) the spinal cord was cut in the extreme upper dorsal region; an inhalation of a mixture containing 66.6 of oxygen and 33.3 of carbonic acid was followed by an immediate fall of the arterial pressure, which fall, in twenty seconds, amounted to seventeen millimetres; in forty seconds, to forty millimetres. After this the pressure began to rise, so that in seventy seconds after the commencement of the inhalation it was twenty-eight millimetres below the norm, and a minute later it was only four millimetres below the norm. At this time the animal was allowed to recover himself and breathe ordinary air for fifteen minutes; at the end of this time the arterial pressure was a little higher than it had been at the beginning of the inhalation. Pure carbonic acid was then given; the fall of pressure was immediate and progressive until death, which occurred in a minute and a half; thus, in twenty seconds, the pressure fell twenty-four millimetres; in forty seconds, forty-nine millimetres; in fifty seconds, seventy-four millimetres.

In Experiment 30, after section of the cord below the first dorsal vertebra, an inhalation was administered containing fifty per cent. of ordinary air and fifty per cent. of carbon dioxide. Immediately after, violent struggles occurred in the anterior portion of the body,

FIG. 10.

EXPERIMENT *A*.—Tracing showing effect of inhalation of carbonized acid gas upon the pulse in normal dog.

EXPERIMENT *B*.—Tracing showing effect upon the pulse after section of vagi.

In conclusion, we believe that our experiments definitely prove that the large slow pulse produced by the inhalation of carbonic acid gas is due to stimulation of the vagi.

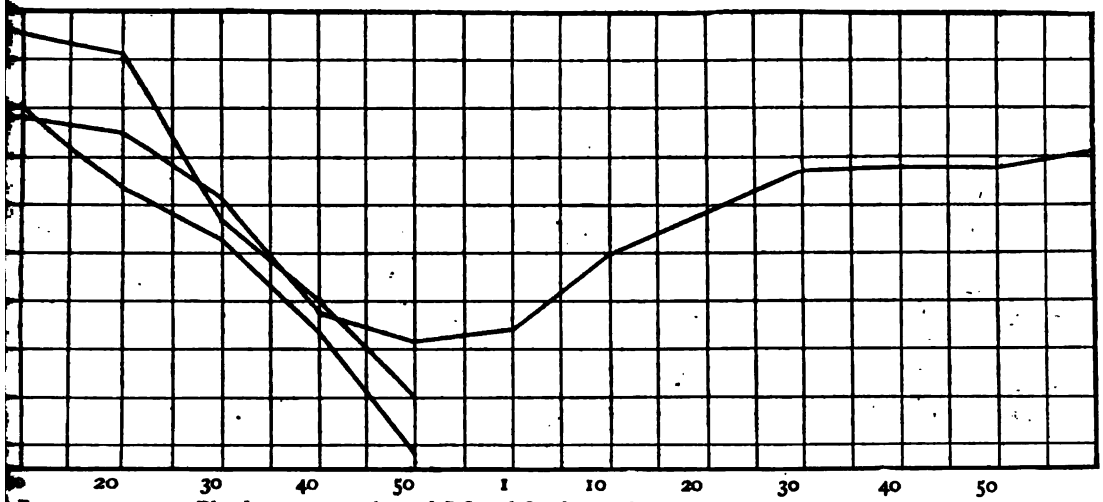
The second series of experiments was made to determine whether the rise of blood-pressure caused by carbonic acid gas is or is not due to an influence upon the vaso-motor system.

In Experiment 28 the cord was cut between the lower cervical and the first dorsal vertebra. Inhalation of a mixture containing fifty per cent. of carbon dioxide and fifty per cent. of oxygen was followed by an immediate fall of arterial

causing the blood-pressure temporarily to rise, so that in fifteen seconds after the beginning of the inhalation it was three millimetres above the norm; a rapid fall then took place, amounting in fifteen seconds to forty-five millimetres, in fifteen seconds more to seventy-four millimetres, in fifteen seconds more to ninety millimetres. After this the pressure, with one temporary exception due to struggles, slowly fell until, four minutes after the beginning of the inhalation, it was one hundred and eighteen millimetres below the norm; thirty seconds later the heart stopped.

results of these three experiments are matically shown in the subjoined cuts.

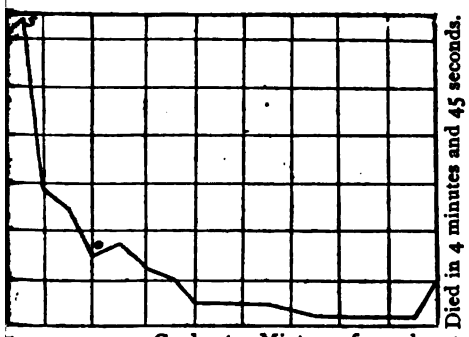
FIG. 11.



EXPERIMENT 29.—Blood-pressure tracings of C_2O and O, after section of spinal cord. *A*, mixture of C_2O and per cent. of each. *B*, mixture of C_2O and O, thirty-three per cent. of first and sixty of second. *C*, pure C_2O.

se experiments prove that, after section spinal cord, carbonic acid is powerless, when well diluted, to cause rise of the

FIG. 12.



PERIMENT 30.—Cord cut. Mixture of equal parts and C_2O. *S*, struggles. ⊙, convulsions.

rial pressure, and, as a corollary from this, the rise of the arterial pressure, which is aced in the normal animal by inhalation luted carbonic acid, is due to stimulation e vaso-motor centre in the medulla. The of pressure produced by strong carbonic is probably due to vaso-motor palsy.

VALUES, RELATIONS, AND DANGERS OF THE ANÆSTHETICS.

BY G. ARCHIE STOCKWELL, M.D., F.Z.S., DETROIT, MICH.*

(Continued from page 522.)

ERMAN scientists some years since took alarm at the increasing large mortality ding chloroform anæsthesia, and, with their proverbial philosophical and inquiring turn of mind, also set out to settle the truth in their usual excellent manner, by a series of experiments upon lower animals.† It is now nearly four years since Ungar discovered that animals, chloroformed for several hours at a time and upon successive days, showed upon autopsy indubitable evidences of fatty degeneration of: *First*, the heart and liver; *second*, kidneys and striped muscular structures; *third*, gastric and mucous membranes generally. More recently Strassman corroborated these observations, and summed up the result of his researches as follows:

"1. After prolonged chloroformization, in dogs, there can be demonstrated a fatty metamorphosis of the liver; the heart may partake of the same changes as a secondary result. Other organs are seldom affected. The changes consist of true fatty degeneration and not of fatty infiltration.

"2. Subsequent to the usual chloroform narcosis, and when recovery therefrom has apparently taken place, a fatal result is occasionally observed to occur.

"3. Inasmuch as in the fatal cases the heart changes were found to be particularly well marked, these latter may reasonably be assumed to have been the cause of death.

"4. In non-fatal cases the evidences of degenerative changes are not found after several weeks.

"5. These changes are particularly prone to occur in those in whom debilitating influences—such as hunger, loss of blood, etc.—can reasonably account for the susceptibility

ember of the New Sydenham Society, London.

† *Virchow's Archives*, Bd. 115.

to this undue action of the anæsthetic. In young and vigorous animals a greater power of resistance counteracts a tendency to these changes."

These propositions were wholly ignored by the Hyderabad Commission, who made no attempt to verify the observations of either Ungar or Strassman, which, agreeing as they do in all essential particulars, point to but one conclusion,—viz., that the charges brought against chloroform by its earlier opponents are more than sustained; for whereas it was hitherto supposed that the accidents during the administration were due to influences of a more or less functional character, it now transpires that, in addition to what has been regarded either as a paralysis of the heart-muscle, through interrupted nerve-force or overstimulation of the inhibitory apparatus, or both, we are to expect true organic changes in the structure of the heart itself.

We are further indebted to the Hyderabad Commission itself for more precise knowledge of another danger pertaining to chloroform,—viz., the importance of the part played by vaso-motor paralysis in the causation of death. If we accept the report without reserve that chloroform has no power of paralyzing the heart, we have one danger removed, only to be replaced by another equally as great in every respect,—viz., *paralysis of the vaso-motor centre.* This, it is admitted, may set in suddenly and without warning; is as unremediable as cardiac paralysis and equally as fatal. "When death occurs from vaso-motor paralysis," says Professor Alexander Wilson, "it is clearly imaginable that the vaso-motor centre may be hopelessly damaged, or rapidly reaching that stage while the pulse is still present and the heart attempting to keep up the pressure; so that for some seconds there may be a deceptive condition, in which both pulse and respiration are present, yet a fatal termination is imminent." That this death from vaso-motor paralysis does occasionally occur in man is shown by the very rapid running pulse mentioned in some cases as preceding fatal termination.

The deductions to be drawn are obvious, and it cannot be too strongly insisted that the work of the Hyderabad Commission gives us no greater (but rather less) confidence in chloroform than we had before. Even admitting the conclusion formulated,—that it does not cause cardiac paralysis,—this is no safeguard, since it must then much oftener produce a sudden and equally fatal vaso-motor paralysis, with paralysis of piration superadded. In the mean also, the physical and chemical propert the anæsthetic remain the same, and th ger of permitting a patient to inhale an dose is as great as ever; and there st main the same practical difficulties i way of laying down any decisive rule when chloroform shall or shall not b ployed. There are, however, certain c of people with whom it behooves one especially upon his guard as regards it ministration, notably, confirmed and ch alcoholics; hysterical, nervous, and exc personages; rickety and strumous chi especially if subjects of amyloid disease patients with feeble and intermittent who are liable to attacks of syncope. A excretion of albumen is increased after longed chloroform anæsthesia, and (ac ing to Scheede) fatty degeneration o kidney epithelium may be caused by th ployment of mercuric sublimate, I woul vise caution in the use of this anæsthe connection with antiseptics in albumi especially in cirrhotic kidney.

It will not be imagined, I trust, tha writer would exclude chloroform from th of anæsthetics. Far from it, as it not has a place, but a most valuable and in instances exclusive one, since there are sions where no other drug can be use such advantage. Indeed, a study of al anæsthetics will prove that none are t wholly condemned or ignored; that each possesses individual dangers and backs forbidding indiscriminate use, also embodies individual advantages tha be in no way compensated for.

ETHER.

Ether ($C_4H_{10}O$) has the especial adva of increasing instead of diminishing ar pressure, and acts as a stimulant to the h which continues to pulsate in fatal cases the arrest of respiration. The order o volvement of the nerve-centres is: The brum, the sensory centres of the cord, motor centres of the cord, sensory cent the medulla oblongata, and the motor-ce of the medulla.

As between this drug and chloroform following conclusions, as far as they go, a justifiable, viz.:

1. As an anæsthetic for surgical purp purely, ether will be found more gen applicable and less dangerous.

2. Chloroform is the preferable ag

anæsthesia is frequently required in the same individual.

3. As a rule, young and vigorous persons, and even those advanced in years who have not been subjected to debilitating influences, or are not the subjects of degenerative disease, may take chloroform with comparative safety; but this is no reason why the same individuals may not take the safer anæsthetic—ether—as well, all other things being equal.

4. In aged persons, suffering from pulmonary affections, the administration may be commenced with chloroform; but, if the operation is long and wearying, ether may oftentimes be substituted with advantage, both to the patient and the anæsthetist.

5. If degenerative disease of the kidneys and heart exist, without pulmonary complications, ether should have the preference always; but if all these conditions coexist, judgment must be exercised as to which has a predominating influence, and the choice made accordingly; and in any event the anæsthetic should be employed with great caution.

6. As already intimated, a climate possessed of uniform high temperature inhibits in some degree the employment of ether as an anæsthetic; yet this has in a measure been overcome by Dr. Edward R. Squibb, of Brooklyn, N. Y., by the manufacture of a stronger product,—*ether fortior*,—especially designed for the use of the anæsthetist, and inclosed in portable air-tight tins of convenient size.

Finally, as a general and universal anæsthetic, most surgeons will be inclined to give the preference to ether, since when properly and understandingly administered, in suitable cases, it is practically without risk. Juillard, in the Geneva clinic, and Dumont,* most emphatically corroborate this and all that has been claimed by the most ardent advocate and supporter of this anæsthetic, and they add that surgical narcosis is frequently secured in two or three minutes. The latter declares that of one hundred and eighty-two ether anæsthesias, in but a single instance, and that an old subject suffering from chronic bronchitis, was there any necessity for anxiety regarding the patient's condition. His conclusions regarding the employment of this agent with persons suffering from pulmonary affections, are entirely in accord with those of American surgeons of extensive experience,—viz., that it must always be a source of more or less anxiety on the part of the administrator. In addition, it may be noted that it is also a rather universally acknowledged fact, that the more acute the lesion of the air-passages, or of the pulmonary structure itself, the greater the danger, while the reverse is true of chloroform.

The facts are, ether stimulates the circulation and also the respiration up to a certain point, which need not be passed if understandingly administered, and this is so easily demonstrated that it must be familiar to any and every one who has ever employed it. Some of our brethren of the British Isles have been inclined to disparage its employment, especially as they regard and stigmatize the procedures attending its use that too commonly obtain in the United States as a "cramming and drenching" method of anæsthesia. It must be admitted, moreover, that this criticism is overtrue, for ether is so generally believed to be a safe agent that it is often employed in the most wholesale and reckless manner. When everything is ready, the inhaler is saturated and crowded down upon the patient's mouth and nose, and there forcibly held, in spite of the struggles of the sufferer, until the desired result is obtained. It is simply a smothering process, most demoralizing to the patient, and disgraceful to the operator, who can plead only ignorance or cruelty. The patient is suddenly choked and strangled with a highly irritating vapor, without being permitted a single whiff of the much-needed oxygen; all the sensations of impending asphyxia are present, and it is little wonder that shock sometimes supervenes. Indeed, it is a miracle that it is not more often made manifest, or that bronchitis and other unpleasant sequelæ do not more frequently follow. Neither is there economy of time or material, as is frequently claimed, as it tends to render the patient resistant, and consequently more difficult to anæsthetize and also to keep anæsthetized after narcosis has begun. It takes but a moment to educate, so to speak, the lungs and respiratory passages, and allow them to empty themselves of residual air by a gradual process of forced expiration; and this encourages the patient to breathe easily, calms his fears, prevents shock, and, moreover, mitigates, even if it does not wholly prevent, reflex muscular spasm and excitement. Then, when the ether vapor has filled the lungs, the inhaler may be pressed close to the face, and anæsthesia quickly follows. By following this latter method, less ether is required, and the boasted superiority of chloroform as to rapidity of action is proven largely delusory.

* *Korrespondenz. f. Schweizer Aerzte*, 1889, No. 23.

I have said that, within limits, ether stimulates respiration. This is true; but, like all other stimulants, when employed for a prolonged period and in large quantities, it becomes a depressant. Therefore, in protracted operations, it is desirable to keep the patient anæsthetized with a minimum expenditure of fluid. To do this is an art, attained only by knowledge and experience, and, once mastered, it is surprising what a small amount of vapor will continue anæsthesia once begun.

Regarding vomiting, which is such a bugbear to some, I can only say that if the patient has partaken of a minimum of some bland food but a short time prior to the operation, nausea is not likely to supervene, but may follow upon partial return to consciousness; and even this may to great extent be controlled by first administering hypodermically a minimum dose of morphine muriate. It should be remembered that an empty stomach is as undesirable as a full one, and apt to be even more distressing as regards subsequent nausea. It has been suggested that a mixture of nitrous oxide and ether would do away with the unpleasant after-effects, but this is not borne out by experience; on the contrary, they are increased. But that ether is more likely to induce nausea and vomiting than chloroform is in the main true, though this in no inconsiderable measure depends upon the way in which the anæsthetic is administered. Out of one hundred and forty-four cases of chloroform and seventy-eight of ether anæsthesia, as conducted at St. Bartholomew's Hospital, London, by Dr. Elliott, fifty-four of the former and thirty-four of the latter had after-sickness; and it is equally true that one does not encounter such aggravated and obstinate sickness after ether as occasionally supervenes from chloroform narcosis.

It is often extremely dangerous to administer ether to the excessively obese or to full-blooded individuals, especially those possessed of an abundance of abdominal fat; and also, for like reasons in part, to alcoholics. Other cases not suitable are: Children and old people; operations wherein a flame or cautery must be brought in close proximity to the face; operations about the face; patients with well-marked bronchial affection. One objection also made regarding this anæsthetic—viz., the production of an abundant secretion of pharyngeal mucus (sometimes so excessive as to cause a serious obstacle to respiration by collecting about the aperture of the pharynx)—is easily overcome by closing the mouth,—by lifting the lower jaw,—when the accumulation passes into the œsophagus, and thence to the stomach.

The instances wherein chloroform may sometimes be preferable to ether are:

1. Children, because heart lesions are rare in childhood, or, when present, are pronounced and every other organ is healthy or supposed to be; further, it requires no apparatus that excites fear, and, moreover, may at first be given so insidiously as to establish partial anæsthesia without the knowledge of the little patient. Ether, on the contrary, is alarming, both from its vapor and the course necessarily employed, and is irritating to the delicate bronchial mucous membrane, while the cold produced may cause an attack of acute bronchitis or pneumonia.

2. Old people, who, as a rule, take chloroform extremely well, especially if given by means of the drop-bottle and a single thickness of lint, the latter held in the shape of a dome over the nose.

3. Operations about the face, or where the cautery or a light is employed in close proximity to the latter.

4. Cases where there is any lung affection. Those of the pleura, however, do not contra-indicate ether as a rule, if understandingly administered. Although chloroform may be in some degree a pulmonary depressant, it is preferable to ether, in spite of the antithetical action of the latter, for reasons obvious and already embodied.

5. Mitral disease with pulmonary engorgement; the same arguments as in 4 here hold good in part.

6. Where absolute muscular relaxation is required, as for diagnosis of tumors, or luxations of hip or shoulder-joints, etc.

7. In some abdominal operations, notably herniotomy, where coughing is to be avoided.

8. In cases where venous engorgement is a decided advantage, as in ligatures of the large arteries, for example, ligations of the carotids or subclavian.

9. Very fat people.

ETHYL BROMIDE (C_2H_5Br) AND ETHYL CHLORIDE (C_2H_5Cl).

The climatic objections that obtain to ether are in no small way applicable to these two products. Neither have, however, seemingly found any great favor with the great majority of anæsthetists, probably because their physiological action is yet a matter of some uncertainty.

Ethyl bromide presents many advantages for brief operations, not the least among which are economy of material and rapid anæsthesia, two drachms usually being sufficient to cause insensibility, and often but half the quantity. The effect rapidly passes off, and, so far as personal experience is concerned (in which I am corroborated by Dr. Robert Farquharson, of Edinburgh, and Dr. Woodbury, of Philadelphia), it does not seem to physiologically depress either the heart or pulmonary apparatus. Farquharson says,* "When the chemically pure drug is used, it has been found to answer the purpose of an anæsthetic, being safer than chloroform and more pleasant than ether."

Dr. Ivan N. Drakin† highly recommends bromide of ethyl as eminently suitable for all operations of under fifteen minutes' duration, the recommendation being based upon personal administration in two hundred cases. He administers from an ordinary inhalatory mask, the average dose required to produce narcosis being about one-fourth ounce; complete anæsthesia follows within one minute, and lasts about a quarter of an hour. The following essential advantages in comparison with other anæsthetics are claimed:

1. While paralyzing pathic sensibility, it leaves the tactile sense intact, and does not affect consciousness to any considerable degree.

2. The pulse and respiration, as well as muscular tone, remain unaltered.

3. Vomiting occurs but very seldom (twice in two hundred cases).

4. Recovery from anæsthesia is rapid, easy, and spontaneous.

5. Anæsthesia is not accompanied by any unpleasant accessory phenomena, except in habitual drinkers and hysterical persons, in whom recovery is followed now and then by some fleeting and slight excitement.

6. No assistants are needed.

7. It is an entirely safe and harmless anæsthetic, provided an absolutely pure drug is used; injurious preparations, inactive as anæsthetics, may give rise to disagreeable and even dangerous accessory effects.

In the hands of the writer, bromide of ethyl has proved alike satisfactory to patient and operator on numerous occasions; and though several deaths are reported to have followed its administration, such are so vaguely and imperfectly given, that one is justified in doubting if the anæsthesia was an active factor therein. However, Dr. William Whitla (of the Belfast Royal Hospital, Ireland) declares its action upon the heart and respiration to be "the same as that of chloroform, from which it differs only in the rapidity of its action (two or three minutes) and the promptness with which patients come from under its influence; it certainly cannot be said to be less dangerous than chloroform, from the trials already made, and it must be still less free from danger than ether."‡

Ethyl chloride, or *ethylene bichloride*, which closely resembles the bromide in physical attributes, has been highly recommended by Dr. Snow, and was likewise made the subject of very careful experiments by a committee appointed by the British Medical Association. They report it as occupying an intermediate position as regards ether and chloroform, being more dangerous than the former, but less so than the latter; that it is more pleasant than chloroform, and much less exciting in the early and after stages; and recovery from its influence is more rapid than in the case of ether. However, Ringer most positively asserts it is equally poisonous to the heart with chloroform. The vapor of half an ounce is usually sufficient to produce anæsthesia in the adult. A decided hinderance to its employment obtains from the fact that it has been observed that opacity of the cornea sometimes follows, owing to its power of dehydrating corneal tissue. Personally, I have had no experience therewith, but Dr. Clover advocates its use in minor surgery, employing after the previous production of insensibility by nitrous oxide.

METHYLENE, OR METHYLENE BICHLORIDE.

Methylene bichloride ($C_2H_2Cl_2$ or CH_2Cl_2) is a thin colorless fluid, of a specific gravity of 1.34, closely resembling chloroform in general appearance and smell, originally introduced by Dr. Richardson in 1867. The following is a summary of his researches:§

"1. It is an effective general anæsthetic, producing as deep insensibility as chloroform.

"2. Its action is rather more rapid than chloroform, but to develop its effects more is required, in the proportion of 6 parts to 4.

"3 It produces a less prolonged second degree of narcotism than other anæsthetics.

"4. When its effects are fully developed,

* "Therapeutics and Materia Medica."

† *Novosti Terapii*, 1889, No. 38.

‡ "Pharmacy, Materia Medica, and Therapeutics."

§ *Medical Times and Gazette*, November 2, 1867.

the narcotism is very prolonged, and is reproduced with great ease.

"5. Its influence on the nervous centres is uniform, and it creates little if any disturbance or break of action between the respiratory and circulating functions.

"6. Its final escape from the organism is rapid, so that the symptoms of recovery are sudden.

"7. In some cases it produces vomiting.

"8. Where it kills, it destroys, by equally paralyzing, the respiratory and circulating mechanisms.

"9. It interferes less with muscular irritability than perhaps any other anæsthetic.

"10. It combines with ether and chloroform in all proportions."

Methylene is prepared by acting upon chloroform with nascent hydrogen, and its vapor, unlike that of chloroform, is highly inflammable; further, being very volatile, it is hard to preserve, except in the dark in well-stoppered bottles immersed in water.

Dr. Morgan* claims that "it is safer, more rapid, more manageable, and more easily recovered from than chloroform. Two minutes commonly suffice to establish anæsthesia, and two drachms given in the same way as chloroform is amply sufficient." It has been given by him eighteen hundred times without a single untoward result, and but nine fatal cases all told have ever been reported by others, and some of these are open to suspicion as to the drug being the cause of death. It is found by ovariotomists to be more manageable than either chloroform or ether; consequently it obtains the preference for operations within the abdominal walls. Sir Spencer Wells has repeatedly sung its praises, and in his "Address on Surgery," before the British Medical Association at Manchester, 1877, said,—†

"Given perfectly diluted with air, the vapor has, in my experience of more than ten years, with more than one thousand operations of a nature unusually severe as tests of an anæsthetic, proved, without a single exception, applicable to every patient, perfectly certain to procure complete anæsthesia, relieving the surgeon of all alarm or even anxiety, and its use has never been followed by any dangerous symptoms which would be fairly attributed to it.

"I wish I could speak as confidently of the chemical composition of the fluid sold as bichloride of methylene as I can of its anæsthetic properties. But whatever may be its chemical composition, whether it is or is not chloroform mixed with some spirit or ether or whether it is really bichloride of methylene I am still content with the effects of the liquid sold under that name when properly administered."

And again he adds:‡

"And more than another ten years have confirmed me in the opinions expressed (referring to the foregoing). Professor Tyndall told me that no chemist could make pure bichloride of methylene under ten shillings an ounce, and that when made it would not keep a week. Others said a mixture of chloroform and methylic alcohol would act as well, but on trial it did not, neither did the 'A.-C.-E. mixture' or Reidel's methylene. Last week Dr. Day gave the latter for me in a case of amputation of the breast. The tube of Junker's apparatus became so choked with snow before I began the operation that the patient could not be made unconscious, and we had to give chloroform, neither of us very willingly.

"Accordingly, until some new anæsthetic is brought forward, I shall remain content with the bichloride of methylene, made as first proposed by Dr. Richardson. I have never known it to fail, and I have never once been alarmed, or even made uneasy by its effects in any one of more than two thousand operations, many of them of unusual severity of duration."

Mr. Rendel§ gives an account of one hundred and twenty-three cases, containing many points of interest, of which the following is an abridged analysis:

"The ages of the patients varied from 6 months to 70 years. Anæsthesia was produced in thirty seconds in eighteen cases, in sixty seconds in seventy cases; in two minutes in twenty-five; in three minutes in five; in five minutes in three; in nine minutes in two. It was maintained one minute in twenty; two minutes in thirty-one; three minutes in nineteen; four minutes in fourteen; five minutes in eleven; six to ten minutes in ten. Less than one fluidrachm was employed in sixteen; additional two to four drachms in thirteen. Fifty recovered within one minute; twenty-three in two minutes; nine in three minutes; twenty-eight in five minutes; eleven in ten minutes;

* *British Medical Journal*, October 16, 1869.

† Ibid., September, 1877.

‡ Ibid., June 9, 1888.

§ Waring's "Therapeutics."

two were continued with chloroform. Vomiting occurred in fifteen,—*i.e.*, one in eight,—but in all these the anæsthetic was continued more than two minutes, and in nine more than a drachm was used; some also had partaken of food just prior to employment of methylene. Three female adults and one child became somewhat cyanosed, with the pulse slower than normal, but on removal of the inhaler and by turning slowly on the left side, they recovered."

From the foregoing, we may well imagine that this anæsthetic is too much neglected by surgeons generally, and that it especially deserves more attention and study than has hitherto been given it on the American side of the Atlantic. There is, however, some reason for this, as may be gathered from the remarks of Sir Spencer Wells. Professors Genther and Eichholz, of Germany, assert the rather startling fact that ordinary methylene bichloride, as found in the shops, is nothing but a mixture of 1 part of this drug with 4 parts of chloroform; and Gutzart maintains that, as prepared by the old process, nothing else is possible. However, the remarks embodied in this paper refer solely to methylene as originally prepared by Dr. Richardson.

NITROUS OXIDE.

Of late the protoxide of nitrogen ($NO = 22$), so long in favor with the dental profession, has received considerable attention at the hands of anæsthetists. Prominent among these, and perhaps the earliest advocates for its employment in general surgery, are Mr. C. J. Fox* and Mr. R. Rendel,† who assign the following reasons for their preference: "Because of its safety and the rapidity with which anæsthesia can be induced,—fifty to one hundred seconds; the readiness with which the patient can be kept for a long period in the anæsthetic state, or, if necessary, can be promptly and thoroughly awakened. Because it is pleasant to inhale, and therefore much fright and mental disease are avoided, diminishing the danger of death by syncope. Because recovery is usually bright, pleasant, and complete, any after-discomfort being very rare. Because sickness is exceedingly infrequent, either during administration or subsequently."

However, the method by which the gas induces anæsthesia—*i.e.*, the exact physiological processes that take place—are matters of considerable doubt. It is, nevertheless, certain that it affects cerebral centres and not the peripheries, and that it is not, as has generally been supposed, decomposed in the system. Joylet and Blanche (*vide* Whitla)‡ affirm that it has no effect whatever upon the system save that of the deprivation of oxygen; and it is stated that, save exhilaration, the same result is obtainable with pure nitrogen or by asphyxia.§

Recently Dr. Frederick Hewitt elaborately discussed the supposed advantages resulting from the use of nitrous oxide alone, or in combination with oxygen, and when mixed with the vapor of ether.‖ He would employ the gas alone—

1. For minor operations,—such as tooth extraction, opening of abscesses, incisions of whitlows, etc.,—with the expectation of securing sufficient anæsthesia in not more than thirty seconds.

2. In the slitting up of sinuses, avulsion of toe-nails, temporary applications of the actual cautery, and operations of this class, he would employ nitrous oxide alternately with oxygen, in the expectation of securing insensibility in one minute.

3. For rectal, vaginal, and urethral operations, breaking up of adhesions of joints, certain dental operations, removal of post-nasal adenoids, and kindred surgical procedures, a mixture of nitrogen protoxide and ether vapor is advised.

There are certain exceptions, however, to be noted in Classes 1 and 2,—viz., (*a*) nasal and oral operations likely to be accompanied

* *Lancet* (London), April 2, 1870.

† *British Medical Journal*, October 16, 1869.

‡ "Materia Medica and Therapeutics."

§ Dr. Buxton, in a paper read before the British Dental Association in August last, denied the asphyxiant properties of nitrous oxide, whereupon Mr. John Elliott, anæsthetist to St. Bartholomew's Hospital, London, remarked: "The assertion that nitrous oxide is no asphyxiant is calculated, I think, to raise the spirit of opposition. Those who have watched the increasing lividity, labored respiration, jactitation, and muscular twitching of nitrous oxide narcosis, will acknowledge that they bear a suspicious resemblance to the phenomena of asphyxia; while Dr. Buxton's own account of the appearance of the brain, of the fulness of the hemispheres, and the purple appearance of the surface, in his experiments on anæsthetized animals, lends color to this view. We are told also that during nitrous oxide administration there is a general fall of blood-pressure,—a fall which is most marked in the splanchnic area. This seems difficult to reconcile with the observed fulness of the brain and spinal cord and overflow of cerebro-spinal fluid, especially when respiration is artificially kept at a normal standard in a curarized animal."—*Birmingham Medical Review*, February, 1890.

‖ *British Medical Journal*, October 5, 1889.

with hemorrhage; and (*b*) operations requiring perfect quietude and total muscular relaxation,—for although nitrous oxide narcosis may be unattended by reflex movement, jactitation, and rigidity, these phenomena are liable to manifest themselves, more especially in strongly-built men, highly nervous and hysterical subjects, alcoholics, habitual smokers, children, and those undergoing operations upon the genito-urinary passages.

In Class 3 should be excepted, also for obvious reasons,—(*c*) all operations within the upper air-passages where the actual cautery is employed. Some years since, during the ether-chloroform controversy, a patient in the Massachusetts General Hospital died from neglect of this precaution, the cautery igniting the pulmonary exhalations. This properly might be termed a death from ether; but the acrimony displayed in the aforesaid controversy led to suppression of the facts, and fatality was ascribed to "*bronchitis.*"

In general, also, nitrous oxide, or any admixture thereof, is undesirable or inadmissible in—(*d*) children under 3 years of age; (*e*) patients suffering from renal disease or pleural, pulmonary, or other conditions attended by embarrassed respiration; (*f*) extreme asthenia; (*g*) collapse.

The preference in *a* and *b* is expressed for nitrous oxide, with a small quantity of ether. In *c*, for nitrous oxide administered intermittently with air, or for chloroform either alone or diluted with alcohol, the latter to be employed when the actual cautery is used. In many of these cases Dr. Hewitt deems it desirable to give gas and ether to deep etherization, and, in the event of the operation being prolonged, to finish under chloroform, or chloroform and alcohol. Chloroform is also deemed the best anæsthetic in all prolonged operations in the mouth or nose; all operations in which venous engorgement would constitute a difficulty or danger; in abdominal surgery; all conditions causing such narrowing of the upper air-passages as to produce temporary or abiding difficulty in breathing; affections of the lung or pleura attended by cyanosis or dyspnœa, marked atheroma, and advanced renal disease.

For *d* and *e*, for excision of tonsils, cases intolerant of ether, old people over 60, extremely fat subjects, those suffering from affections of the air-passages or pleura with but slight embarrassment to respiration, morbus cordis with feeble or irregular heart action including fatty degeneration, extreme abdominal distention, in all is recommended a mixture of alcohol, chloroform, and ether.

In collapse of extreme asthenia—for example, neglected, strangulated hernia—the preference is given to pure ethylic ether, sparingly administered from a towel cone.

The anæsthetic recommended for the lying-in room (and also during the passage of renal calculi) is the alcohol-chloroform-ether mixture, or chloric ether; but where forceps are employed, ether *solus*.

That ether is preferable to chloroform for forceps delivery, or the "A.-C.-E. mixture" to chloroform alone in any stage of labor, will scarcely be accepted by the majority of obstetricians. Death from chloroform in such cases is positively unknown, and it alone perfectly fulfils the conditions of rapidity of action and lack of unpleasant odor. Moreover, post-partum hemorrhage is less apt to follow the use of this anæsthetic than ether, ethyl, methyl, or the triple mixture.

As regards the "A.-C.-E." combination, it is a mystery how, in these days of enlightenment, it obtains popularity, or how it secured the endorsement of a joint committee of the Royal Colleges of Surgeons and Physicians. Given with plenty of air, and under the other conditions demanded by chloroform, it invariably gives the typical trace of the latter, proving that it is to chloroform chiefly that it owes its anæsthetic influence. If administered freely, it frequently produces very rapid and dangerous fall of blood-pressure, such as has been observed from chloric ether. It is, then, simply a *dilute chloroform*, and by no means the best dilution: and, moreover, it is an unchemical, unphysiological, and every way unscientific combination. Whatever there may be of either good or evil that pertains to chloroform, ether, or alcohol, should be kept apart; and the habit of uniting the one, and at the same time attempting to prevent the undue influence of the other, must always remain a matter of uncertainty and doubt, especially since ether and chloroform are physiologically antagonistic. The danger to respiration and heart's action would be doubled but for this; and, in fact, the danger of cardiac arrest is enhanced. This has been proven by Ellis, Juillard, and Dumont, and later by Ungar.

The apparatus demanded for the administration of nitrous oxide is a disadvantage if the anæsthetic is to be employed away from the office or hospital, and the same objection obtains to the combination of gas and ether vapor. The recent modification of Clover'

apparatus, as designed by J. Frederick Silk,* however, apparently does away in great measure with these objections, being comparatively portable and easy of management.

In a discussion before the Brooklyn (N. Y.) Surgical Society, June 6, 1889, Dr. George R. Fowler remarks:† "For operations on the perineum or within the abdominal cavity, or where the patient must be thoroughly relaxed, I think nitrous oxide is not to be depended upon, though why is not exactly known. One patient will be almost suffocated; his condition appears to be alarming; and although apparently anæsthetized, yet a peculiar rigidity of the limbs would prevent an operation,—say for hemorrhoids, for instance. On the other hand, I call to mind an occasion where Dr. Brush most successfully administered nitrous oxide for me in a case of laryngectomy, the anæsthesia proving all that could be desired. The patient was under its influence during the removal of the larynx,—a period of time covering one hour and forty minutes. I think in about three minutes from the time the tube was removed, through which the anæsthetic was given, the patient rose up on the table and looked about wonderingly, and, had she been allowed, would have walked to her room. It was a perfect revelation to me. I had never dreamed that it could be accomplished, and when I rather hesitatingly gave my consent that nitrous oxide should be administered, it was with a great many misgivings."

Dr. Geo. W. Brush, the anæsthetist in question, added: "I have had quite a little experience for the last ten years with this anæsthetic, and have come to the conclusion that it is like all other anæsthetics,—it cannot always be depended upon. Once in a while we come across a case where it cannot be used, and therefore I have adopted the habit, in going to any case to anæsthetize with nitrous oxide, of taking the three anæsthetics along, and if the patient does not come under the gas readily for the prolonged effect, I substitute ether or chloroform, as seems best. But ordinarily, or in the majority of cases, if it is desired to give it for prolonged operations, it can be done. I gave it in one operation for stone, and the operation was forty minutes. The patient was thoroughly anæsthetized, and was practically recovered from it before he could be gotten in bed. . . . But, as I have said, there will occasionally be a patient who will manifest some unpleasant symptoms for the operator, such as rigidity or unsteadiness, and occasionally (though this is rare) a case where anæsthesia is not complete. . . . But experience leads me to the opinion that where nitrous oxide can be used in surgery, it is safer and pleasanter for the patient, economizes the time of the operator, and anæsthesia can be maintained almost indefinitely if there is proper care on the part of the administrator, the patient being in better condition when the operation is over than if ether or chloroform had been used."

The wide-spread belief in the utter inocuousness of nitrous oxide; the fact that the shock liable to result where ether or chloroform are the anæsthetic agents is wanting; the absence of irritating qualities, as well as of taste and smell; and the ease of its administration when armed with proper apparatus, are certainly attractive features, and lead to the surmise that this agent is deserving of more extended trial by surgeons.

There are, however, several drawbacks: The time and trouble required in preparation; its bulk and non-portability, even when compressed into iron cylinders; the complex apparatus necessary for its administration; its tendency to *produce somewhat intractable glycosuria;* unsuitability to certain cases, especially when muscular relaxation is required; the fact that, like all gases, it remains gaseous at the temperature of the blood and does not condense when introduced into it; and last, but by no means least, the ghastly cyanosis induced along with the appearance of impending suffocation which nearly all patients exhibit, and which naturally lead to the belief that carbonic dioxide accumulates in the circulation. This last in the patient above referred to by Dr. Fowler was "present all the time," and he declares‡ that it was "all he could do" to preserve his equanimity during this trying time. "In spite of Dr. Brush's assurances, I felt far from comfortable, and whatever credit my colleagues, who witnessed the operation, may be inclined to give me for its successful completion, they will never know how much I was handicapped by that ashen-gray, death-like, upturned face, within a few inches of my own, during the whole time. . . . It was small comfort to know that one's patient was not being suffocated with one agent, while the suggestion was constantly before one's eyes that either that or something else was threatening to sus-

* *British Medical Journal*, January 18, 1890.

† *Brooklyn Medical Journal*, November, 1889, p. 709.

‡ Ibid., February, 1890, p. 70.

pend animation or destroy life. Dr. Brush's assertion that 'they always look badly' under its influence is somewhat reassuring, but his suggestion that the appearances are due to some chemical changes in the blood itself only leads one to dread the possibility of there being some ultimate, if not immediate, danger resulting from its administration. Chemical conditions which could produce such changes in the circulating medium, even temporarily, are not to be disregarded."

With regard to this somewhat anomalous state of apparently threatened death and yet assured safety, Ulbrich, who employed the spectroscope for the purpose of determining the relation which nitrous oxide bears to the blood during administration, declares there is chemical union between nitrous oxide and the hæmoglobin. However, this observation has not been confirmed, neither has it been shown that this union could be of a character that would not destroy or even temporarily abrogate the function of the hæmoglobin. Preyer, Buxton, and MacMunn have made similar spectroscopic experiments, but without arriving at any definite or satisfactory conclusion. But Rothman, who severely criticised Ulbrich, claims to have established as a fact, that blood saturated with nitrogen protoxide possesses exactly the same spectrum as oxyhæmoglobinic blood. If this is true it is a point of incalculable advantage, since it proves that the hæmoglobin is enabled to continue its function in spite of the presence of the gas in the circulation, and hence no harm can result from the prolonged administration of the anæsthetic. Upon suspending the inhalation, the processes of oxidation are at once resumed by the admission of atmospheric air to the respiratory apparatus.

Another source of decided inconvenience to the use of nitrous oxide, and that debars its employment at night and in specific cases, is the altered color of the blood as it issues from the divided arteries, rendering it difficult, and sometimes impossible, to distinguish from venous and capillary oozing. An arterial twig may, for several reasons, not always give off a *per saltum* stream, and yet afford sufficient blood to seriously embarrass the operator and to require a ligature; and while slight pressure or hot water may suffice to control capillary hemorrhage, it is sheer waste of time to resort to such methods in case the flow is arterial.

A point worthy of recollection is mentioned by Dr. Fowler in connection with a case in which he desired to remove a portion of the lower jaw for necrosis. It was found impossible to bring the patient under its influence when ether was substituted. "But, either from the previous efforts with the nitrous oxide or from some peculiar idiosyncrasy on the part of the patient, it was impossible to control the powerful efforts at resistance without exerting undue force." He was finally compelled to substitute chloroform, under which the operation was brought to a satisfactory conclusion.

The peculiar condition of muscular rigidity which sometimes supervenes is not at all relieved by pushing the anæsthetic, as is the case with ether, chloroform, and methylene; on the contrary, it rather increases as narcosis deepens, until it sometimes extends to the muscles of respiration, which, of course, would demand instant cessation of further attempts towards anæsthesia with this agent. Even the combination with ether vapor does not overcome these defects; and this rigid condition, of course, precludes the use of nitrous oxide for operations about the anus, rectum, perineum, or elsewhere when a relaxed condition is necessary or desirable.

Arguing from his view of the absence of pulmonary engorgement, Dr. Buxton, in an essay read before the British Dental Association at Brighton in August last, made the statement that there is no ordinary intra-pleural or intra-pulmonary condition which should, in his experience, contraindicate the use of nitrous oxide. This, however, is at variance with the experience of most anæsthetists. Dr. John Elliott, of St. Bartholomew's Hospital, London,* whose experience is inferior to none, remarks that the only instance in which he ever saw really alarming symptoms follow nitrous oxide anæsthesia was a case in which a slight pneumonia was present; nevertheless, he would not venture to employ it when there is any active morbid condition of either lung or pleura.

Cases also of mitral disease, with tendency to pulmonary engorgement, should, I think, be considered unfit for the administration of gas. And it is contraindicated, or, at least, should be administered with extreme care, in anæmic persons (especially young girls), those with feeble and intermittent pulse, and old and feeble individuals. It has been said also that nitrous oxide is inadmissible for young children, though on what ground, other than the fear inspired by the apparatus

* *Birmingham Medical Review*, February, 1890, p. 67.

demanded for administration, I cannot imagine. Dr. Elliott (just quoted) declares that he has given it repeatedly, and found that they "take it extremely well."

Recently Dr. George W. Brush, of Brooklyn, N. Y., has been experimenting upon animals with a mixture of nitrous oxide and chloroform vapor, but has not as yet arrived at any very definite conclusion, though he thinks the indications point to a very safe anæsthetic. It seems to act as a stimulus, and overcomes the depression that occurs when the latter agent alone is employed.

886 Jefferson Avenue, Detroit, Mich.

THE TREATMENT OF THE MORPHINE-DISEASE.

By J. B. Mattison, M.D.,* Home for Habitués, Brooklyn, N. Y.

THREE methods obtain in the treatment of this disorder,—the slow method, the abrupt method, the rapid method. Each has its advocates, and under some conditions each its advantages.

A consideration of the first and second need not here detain us, the object of this paper being to invite attention to a plan of treatment original with the writer, and practised by him for several years with increasing satisfaction and success. It is a more or less happy mean between two extremes,—avoiding the painful ordeal of abrupt disusing or the tiresome delay of prolonged decrease.

Tersely stated, it may be said that this disease involves the cerebro-spinal and sympathetic systems, well-attested clinical facts proving that they bear the brunt of opium excess, which induces changes that give rise to great nervous derangement when the opiate is abruptly withdrawn, and which, in gradual withdrawal, is seldom entirely avoided.

The aches, pains, yawning, sneezing, shivering, nausea, vomiting, diarrhœa, restlessness, delirium, convulsions, exhaustion, collapse, incident to sudden opiate-quitting, are reflex indications of great irritation in those centres, and any treatment having the power to counteract and control this condition must contribute vastly to the patient's comfort and cure.

The method we commend is based on the power of certain remedial resources to subdue abnormal reflex action, and secures largely two cardinal objects,—minimum duration of treatment and maximum freedom from pain. It consists in producing a certain degree of nervous sedation, and consequent control of reflex irritation, by means of the bromides, though we refer specifically to the *bromide of sodium*, having used that exclusively in cases under our care. This is merely a new application of a well-established principle, for the power of the bromides to subdue abnormal reflex irritability is so constant that it may be looked upon as an almost certain sequel of such medication. Dr. Edward H. Clarke, in his valuable treatise on the bromides, says, "Diminished reflex sensibility, however different physiologists may explain the fact, is one of the most frequent phenomena of bromidal medication that has been clinically observed, and is, therapeutically, one of the most important." And the evidence of other observers—Gubler, Guttman, Laborde, Voison, Damourette, Eulenberg, Claude-Bernard, Brown-Séquard, and Echeverria—is to the same effect.

In speaking of the bromide of sodium let it be understood that we refer entirely to the influence of the *continued dose*, by which we mean giving it twice in the twenty-four hours, at regular intervals, so as to keep the blood constantly charged with the drug. A most important difference exists between the effect of this mode of using and that of the single dose, or two or three doses so nearly together as to form practically one, for in the former case the system is constantly under the bromide influence, while in the other, the drug being eliminated in a few hours, it is nearly free a large portion of the time. Results obtainable from continued use cannot be gotten from the single dose, and so its value is far greater in this condition.

Again, the action of the continued dose being somewhat remote,—four to six days usually elapsing before there is decided evidence in this direction,—much more desirable results are secured by its employment for several days *prior* to complete opium-quitting, meanwhile gradually reducing the opiate, than if the withdrawal be abrupt and then reliance placed on the bromide; for, in the former, the maximum sedative effect is secured at the time of maximum nervous disturbance from the opium removal, and its counteracting and controlling power is far in excess of that to be had from its taking after the lighting up of the nervous irritation. What, then, we term *preliminary sedation* forms an *original* feature in our giving of the bro-

* Member of the American Association for the Cure of Inebriates; of the New York Neurological Society; of the Medical Society of the County of Kings.

mide, and it is this special point we commend, our experience having convinced us that we have in it a very valuable means of lessening discomfort incident to the treatment of this disorder.

The value of the various bromides depends on their proportion of bromine. Bromide of potassium contains sixty-six per cent., sodium seventy-three, and lithium ninety-two per cent. We should, therefore, expect a more powerful influence from the last drug, and, according to S. Weir Mitchell, it has a more rapid and intense effect. The sodium, however, answers every purpose, and has several points in its favor over other bromides,—is pleasanter to the taste, more acceptable to the stomach, causes little cutaneous irritation, and much less muscular prostration. In this connection, experiments by Drs. Ringer and Sainsbury on the superior value of the sodium salt are of interest, and may be found in the *British Medical Journal*, March 24, 1883.

Either of the bromides, in powder or strong solution, is somewhat irritant, sometimes causing emesis, and in any event delaying absorption. A practical point, then, is that it be given largely diluted. Dr. Clarke says, "There should be at least a drachm of water to each grain of the salt." We give each dose of the sodium with six or eight ounces of cold, iced, carbonized, or lemonized water, and have never known it to disagree.

To secure the requisite degree of sedation within a limited time, it is essential that the bromide be given in full doses. Failure from its use, in any neurosis, is often due, we think, to a non-observance of this point. Our initial dose of the sodium is 30 grains, twice daily, at twelve hours' intervals, increasing the amount 20 grains each day,—*i.e.*, 40, 50, 60 grains,—and continuing it, in proper cases, eight to ten days, reaching a maximum dose of 100 to 120 grains twice in twenty-four hours. During this time of bromidal medication the usual opiate is gradually lessened, so that from the eighth to the tenth day it is entirely abandoned. A decrease of one-quarter or one-third the usual daily quantity is made at the outset, experience having proved that *habitués* are almost always using an amount in excess of their actual need, and this reduction causes little or no discomfort. Later, the opiate withdrawal is more or less rapid, according to the increasing sedation, the object being to meet and overcome the rising nervous disturbance by the growing effect of the sedative; in other words, maximum sedation at time of maximum irritation.

Exceptions to this may occur. Some patients are so weak and anæmic on coming that a previous tonic course is deemed judicious; the usual opiate is continued for a time, and, meanwhile, by full food, tonics and other measures, effort is made to improve the impaired condition, and with success, for we have seen patients gain markedly in strength and weight during this roborant *régime*. Sometimes a patient, before placing himself under our care, has reduced his daily taking to the lowest amount consistent with his comfort. If so, the initial large reduction is not made, but the decrease is gradual throughout. Again, in some cases, no reduction is made for two or three days, when the bromide effect is secured in part, and the decrease is then begun. And with all patients this rule governs: *each case is a law unto itself, and the length and amount of the bromide-giving and consequent rate of opiate decrease is determined entirely by individual peculiarity, as shown both before and during treatment.*

Surprise may be expressed and objection made regarding the extent of the bromide doses, but the fact must never be overlooked that we are not to be governed in the giving of any remedy by mere drops or grains, but by the *effect produced*. Again, one result of opium addiction is a peculiar non-susceptibility to the action of other nervines, necessitating their more robust giving to secure a decided effect. More, under the influence of certain abnormal conditions, doses which ordinarily are toxic become simply therapeutic. Medical annals abound with such cases, and among the most striking may be noted the following: Dr. Southey read before the London Clinical Society notes of a case of tetanus in a boy 10 years old. The first symptoms were observed two days after a severe fright and drenching, due to the upsetting of a water-butt. They steadily increased up to the date of his admission to St. Bartholomew's Hospital, on the eighth day of his illness, when the paroxysms of general opisthotonos seized him at intervals of nearly every three minutes. Each attack lasted from fifteen to thirty seconds, and although between the seizures the muscles of the trunk became less rigid, those of the neck and jaw were maintained in constant cramp. The patient was treated at first with chloral, ten grains, and bromide of potassium, twenty grains, every two hours, and afterwards with the bromide alone in 60-grain doses every hour and a half. When about two ounces wer

taken in twenty-four hours the attacks became less frequent, but at first each separate seizure was rather more severe, and on the evening of the eleventh day he was able to open his mouth better. On the thirteenth day the bromide was decreased to 20 grains every three hours, and on the fourteenth day was discontinued. When it had been omitted twenty-four hours the attacks returned at intervals of an hour, and the permanent rigidity of the neck muscles was re-established. His condition now steadily became worse, so that on the eighteenth day of his illness it became necessary to resort to the previous large doses,—1 drachm every hour and a half. After three such doses the expression became more natural and he was able to open his mouth again, but it was not until the twenty-fifth day of his disease that it was possible to discontinue the remedy. The patient remained in a state of remarkable prostration and drowsiness, sleeping the twenty-four hours round, and only waking to take his food for eight days, and passed all his evacuations under him. He subsequently rapidly and steadily convalesced. The bromide caused no acne or other unpleasant effect, and certainly seemed to exert a markedly controlling effect on the tetanus.

Given as we commend, no effect is usually noted before the fifth or sixth day. Then patients often mark an increasing drowsiness, which deepens into slumber more or less profound, so much so at times that it is difficult to remain long awake. With this is an aversion to exercise, not solely due to lessened muscle force, but largely to mental hebetude. Some cases are met with in which the hypnotic effect is not very decided, but the rule is as stated. Sometimes a saline taste and increased saliva with the bromic breath are noted, and the tongue becomes furred. Acne is usually absent. The renal secretion is often largely increased. We have known a patient to pass more than one hundred ounces in the twenty-four hours, and we have noticed that where there is no increased diuresis, the sedative effect of the drug is more prompt and decided. Such cases require a less-prolonged bromide-giving.

With some there is slight transient loss of co-ordination in the fingers, and in very sensitive subjects there may occur mild twitchings of the forearm tendons. These soon subside, and their going may be hastened by local faradic *séances*.

Another bromide symptom, and curious, relates to a peculiar form of aphasia, as shown by using one word for another,—Brown for Jones, cake for comb, etc. This may persist for days. Dr. Clarke refers to several such cases, and says, "They are hints of a distinct organ of language, and suggest the notion that, inasmuch as the drug we are considering paralyzes reflex before it does general sensibility, language may be the expression or correlation of a peculiar reflex power."

Another symptom is an odd effect on the memory, the loss of a word or sentence and entire inability to regain them at the time, so that the train of thought is abruptly ended. This, though often amusing, is sometimes quite annoying to the patient, but has no other importance, and soon subsides.

Before ending this phase of treatment, we must again insist that all cases of opium-taking do not require the bromide alike. This is a point of prime importance, and failure to put it in practice is often the main secret of ill-success or unpleasant results in its use. The patient, as well as his disease, must be treated, and he who uses the bromide as Fothergill asserts Opie mixed his colors—"with brains"—will get the most good. Let it be distinctly understood that some cases are ineligible for the bromide treatment. Those complicated with serious lesion of heart or lung should be excluded, and those with marked general debility should always be given a previous tonic course; and, as before asserted, *in each and every case where it is used, the extent of its giving is to be governed entirely by individual peculiarity, as shown both before and during treatment.*

Having secured the desired sedation, and reached the last day of opiate-using, it is our practice to give, at or before bedtime of that day, a full dose of morphine. This secures a sound, all-night sleep, from which the patient wakens much refreshed and often quite surprised at his good condition, which usually persists during the day. Towards evening—though it may be delayed till night or the next morning—some reflex symptoms may be expected, which are met with 20 grains of quinine, followed by ½-ounce doses of fluid extract of coca every second hour. Some cases require nothing else. If this fails, we give full doses of fluid extract of cannabis indica every two hours, or less often, as may be required. If more decided measures be called for, we use hot baths—105° to 112°—of ten to twenty minutes, and repeat as required. A short shower or douche of cold water often adds

to their value. Nothing equals them for this purpose. Warm baths are worthless. The water must be *hot*, as much so as patient can bear.

And just here as to "full doses" of the hemp. The book dose is useless. As stated, opium-taking begets a peculiar tolerance of other nervines, and they must be more freely given. We give 60 minims of Squibb's fluid extract, repeated as mentioned. Small doses are stimulant and exciting, large ones sedative and quieting. And lest some timid reader should think this reckless dosing, we hope to calm his fears by saying that the toxic power of hemp is feeble, and that these doses are the result of experience with the drug in many cases in which small ones have failed of the desired effect.

For relief of neuralgic pain varied measures suffice. Leading the list are electricity and the local use of ether. As to the value of the galvanic current in migraine and other neuralgiæ, so common in opium *habitués*, and the manner of using it, the reader is referred to papers by the writer, reprints of which can be had, if desired. The same agent is effective in relieving limb and lumbar pains, though here a much stronger current is required than can be used with safety about the head. Sometimes a faradic current acts well, and when one fails, trial should always be made with the other. Local hot baths are often of great service.

Regarding the ether, those who have never used it will, we think, be surprised at its pain-easing power. In either way applied,—spray, drop, or lavement,—it is potent for good.

These three—electricity, ether, hot water—are our own main anodynes, and one special point in their favor is entire freedom from unpleasant gastric or other result.

Other remedies at times relieve. Acetanilide, antipyrin, exalgin, or phenacetin, in 10- or 15-grain doses, are of value. The latter has often a decided hypnotic effect. Croton-chloral, 10 grains, or fluid extract of tonga, may act well. Menthol, two drachms to the ounce of alcohol, by brush or spray, or the menthol cone, sometimes serves. So, too, bisulphide of carbon, and the camphor and chloral combination.

Under this plan of treatment marked disorder of stomach or bowels is rare. Our rule is to give a mercurial or other cathartic at the outset, if there be alvine torpor, and then secure regular action by such laxative as seems best. If restraint be needed, large enemas of hot water may be used. This failing, 30-minim doses of fluid extract of coto, in capsules, o 60 grains of subnitrate of bismuth every fou hours. If, however, it persists, the best thin is a full opiate,—tinct. opii, per mouth o rectum, at bedtime preferred. This prompth controls, gives a full night's sleep, and th trouble seldom returns. Fear of a bad effec on convalescence is unfounded.

Diet is not restricted, unless the condi tion of the stomach or bowels renders i necessary. We have again and again see patients recover who did not vomit once, o who had only two, three, or four movement daily. The excessive vomiting mentioned b Levinstein and Obersteiner—abrupt disuse—we have never noted. The former though the collapse—which we have never seen—in several of his cases was due to the vomit ing and purging. More likely the larges factor in causing it was the exhausting gen eral mental and physical suffering which hi monstrous method entails. If the stomach rebels, entire rest for a time, or milk an lime-water, malted milk, or bovinine, i small amount, may act well. If not, sina pisms, ether, faradism, or bismuth, chloro form, menth. pip., and ice are of value. Al failing, a full opiate hypodermic will prompth suffice.

Twenty-four hours after the opiate-quitting patients are directed to bed, and kept ther two to four days, for we are convinced tha rest is an aid of great value. This, too is Erlenmeyer's opinion, who says, "Th best remedy is rest in bed. The importanc of quiet, rest in bed, and warmth in pro moting restoration during the abstinenc struggle, cannot be overestimated. I orde every patient to bed at the start, and ca state with confidence that those who submi to this till I allow a change will get alon more easily and satisfactorily during th treatment than others who do not obey, bu who insist on moving about or having th run of the premises."

Having thus crossed the opiate Rubicon treatment relates largely to the debility and insomnia. For the former, of tonic stimulants, coca leads the list. Of Squibb's fluid extract, we give 4-drachm doses three or four times daily, and, as need for it lessens, decrease the dose to 1 or 2 drachms, and this amount, combined with other tonics, may be given for weeks. As a rule, however, its use is quite ended in a fortnight. To remove the mental and physical depression, the minor neuralgiæ, and the desire for stimulants som times observed in these cases, nothing equa

it, and full doses of tincture of capsicum often add to its value.

Opinions vary regarding cocaine. Obersteiner lauds it; Erlenmeyer decries it. In some cases it acts well, its use being limited to the rest period of treatment, but is unsafe for self-using, excess being almost certain. It may be given in 1- to 2-grain doses of the muriate, largely diluted, by mouth, every three or four hours, or subcutaneously in half that amount twice as often.

Another agent of much service is general faradization, twenty-minute *séances* daily, the feet on a plate to which the negative-pole is attached, while the other electrode, encased in a large sponge well wet with warm water, is applied to the entire surface, with a current strong enough to be well felt but not painful. This imparts a feeling of exhilarating comfort, and thus applied, or with anode to cervical spine, it may be used daily, taking care not to overdo, for a current too strong or long works mischief, overstimulating and exhausting to the extent, it may be, of several days' discomfort, which nothing but time will remove. Exceptionally, faradism disagrees.

Galvanism is another general tonic of special value. Our method is positive pole to nape of neck and negative to epigastrium for five minutes, then the former behind the angle of each jaw for a minute or two, making entire *séance* seven to nine minutes.

Next to the electric tonic ranks the cold shower-bath. With many it is a great invigorator, and patients who dread it at first soon come to appreciate it most highly. With some it acts as a hypnotic. We recall one case, in particular, of a medical man, who, still insomnic, after sleeping two or three hours, and awaking with no prospect of further sleep, would take a shower, followed by vigorous rubbing, and soon fall into a refreshing slumber, lasting till morning.

Internal tonics, of course, have a place in the roborant *régime*, varied as the case may demand. An excellent one is fluid extract of coca, with syrup or elixir, hypophosphites, iron, strychnine, and quinine, two drachms of each after meals. Another, Fowler's solution or quinine, with tincture of nux vomica, and dilute nitromuriatic or phosphoric acid. If anæmic, ferric tincture or Blancard's pills. Digitalis is useful. In some cases cod-liver oil is of value, with pepsin and quinine, with phosphates or plain, and may be given for months.

Some anorexia is usually present, yet it may not prevent the regular meal, and need never occasion anxiety, for it will likely give place to a vigorous appetite, which may be encouraged to fullest feeding short of digestive disaster. If it be slow in returning, it has seemed a good plan to rouse the alvine system, once or twice a week, with a mild cathartic at bedtime, or a full morning dose of rubinat or hunyadi.

Regarding the insomnia, Levinstein said, "Sleeplessness, which is generally protracted up into the fourth week, is very distressing." Our record differs. Wakefulness is an invariable sequel, but under the plan we pursue it is usually not so marked or prolonged, and in ordinary cases recovery can generally be promised, without the loss of a single entire night's sleep. We have known a patient able to dispense with hypnotics in five, others in eight, and the average, in a series of cases, was eleven nights.

The insomnia is of two kinds. Most patients secure sleep on retiring, but waken early,—two or three o'clock,—and fail to get more. Others remain awake nearly all night before slumber comes, and these usually require soporifics the longer. For relief of this, cannabis indica, or chloral and bromide, in full doses, suffice. The hemp is given in 40- to 60-minim doses, in capsules, or mixed with glycerin or ginger syrup, two hours before bedtime. When it acts kindly, there may be noted, in some, laughing and talking during the first hour, tending to sleep in the second. Many require nothing else. At the end of a week it is lessened, and, usually, ended in ten or twelve days.

Chloral, during the first four or five nights of opium abstinence, fails as a soporific, often causing a peculiar excitement or intoxication,—patients talking, getting out of bed and wandering about room,—followed, it may be, after several hours, by partial sleep. Later, in full doses,—we prefer 40 grains at once, rather than two 20-grain doses,—alone, or with a bromide, it can be relied on.

Other hypnotics—sulphonal, chloralamide, somnal, hypnal, amylene, paraldehyde—in full doses may be used, but will fail unless patient be free from pain. The first is the most valuable, 15 to 30 grains fine powder, dry on tongue, well rinsed, two hours before retiring. The time and style of taking are important. Erlenmeyer, who uses it largely, told us he gave it in a glass of hot milk at tea-time.

If, as rarely happens, the sleepless state is so pronounced or prolonged as to distress patient, we never hesitate to give a full opiate, by mouth, and with good result.

Erlenmeyer says, "In such cases there remains nothing to do but to resort to morphine. I give, then, the alkaloid internally on two consecutive evenings; a certain cumulative affect takes place. The first night after the administration of the morphine by mouth, in the dose of ⅓ grain, there is usually no sleep; but on the second night, after giving the same dose, a sound sleep of six to eight hours' duration will ensue. When this course is followed up once or twice a week, for several weeks, it often brings about a good healthy condition in the patient, and it is no rare experience with me to find the repeated administration of these small doses of morphine for a short time result in such benefit and recuperation that it was soon possible to stop it altogether. I have not observed any special danger from these resumed doses of morphine, although I feared it; but after I was constrained in several bad cases, when every other medicine had failed, to resort to this, I was convinced that my fear was groundless."

In all cases drugs should be dropped as soon as possible, and sleep secured by a walk or other exercise,—an electric *séance*, a Turkish or half-hour's warm bath, a light meal, a glass or two of hot milk, one or more of these before retiring. Patients whose slumbers end early often note a peculiar depression on waking, and if so, a lunch, hot milk, coca, coffee, beef, or bovinine should be at command.

It may be well in passing to refer to certain minor sequelæ and their treatment. Dyspnœa or palpitation may distress. A stimulant—coca with capsicum or Hoffman's anodyne with aromatic spirits of ammonia—will promptly control.

Some patients are at times annoyed by aching pains in the calves. Strong galvanic or faradic currents, hot water, massage, chloroform, or ether will usually relieve. Others mention a peculiar burning in the soles of the feet, for which mustardized foot-baths and large doses of quinine may be used.

Pain in the abdomen may be eased by hot poultices or fomentations, and full doses of camphor with capsicum. The latter, with atropine injections, act happily in ovarian irritation.

Very rarely the unrest and insomnia are so marked that we use hyoscyamine. If so, Merck's amorphous, $\frac{1}{1\frac{1}{2}}$ to $\frac{1}{6}$ grain, or hyoscine hydrobromate, $\frac{1}{100}$ to $\frac{1}{60}$ grain, hypodermically, or double the dose of either, by mouth.

Delirium may occur, but usually is mild and transient. Condensed food, with alcohol, should be freely given. If marked, one or more morphine injections may be added.

Collapse, which we have never seen, is threatened by irregular pulse and breathing, pallid, livid skin, or faintness, demands prompt treatment or the patient will die. An immediate injection of morphine, full dose, must be given, and repeated every ten or fifteen minutes, if required.

It is our custom to continue the evening dose of quinine for several days.

In many cases we give a full opiate forty-eight hours after its habitual taking is ended, and sometimes a second dose seventy-two hours later. This breaks the abstinence tension, affords a grateful respite, recurring symptoms are lessened, and the general effect is, we think, good.

Soon as possible after the rest period in bed, patient should have the outer air and sunshine, at window, in open carriage or car, much walking or other active exercise being avoided for a time, for, if too early taken, they are very apt to be followed by fatigue, unrest, and insomnia.

Along with what has been suggested should be such other general measures as will add to the good secured. Patients must have attractive surroundings, cheerful society, diverting occupation, amusement, music, the play, and freedom from worry of body or mind; in fact, anything, everything that will aid in the effort to secure a return to pristine health. That the management of these cases *subsequent* to the need of active medical care is of great importance, enlarged experience increasingly convinces. Neurotic or other disorders noted prior to addiction, whether genetic or not, must be relieved or removed. So, too, those that may first appear after the opiate-quitting; and when none of these are met, when there is merely a lessened power of brain and brawn, ample time—months or years, if need be, for the greatest danger is within the first year—must be taken in which to get thoroughly well, if the chance of relapse would be brought to a minimum.

It is not to be supposed that a system shattered by opiate excess will regain its normal status in a week or month, or that a premature return to mental or physical labor will not imperil the prospect of permanent cure. The importance of this must be insisted on. To medical men, who compose so largely the better class of *habitués*, it is especially commended. Professional work must not be resumed too soon. The risk of a narcotic reusing is in reverse relation to

the opiate abstention, and as favoring this abstinence, prolonged rest, change of scene, foreign travel, sea-voyages, all have much promise of good.

Some details of treatment other than strictly remedial may be of interest. Our rule, in the opiate decrease, is not to inform the patient as to its progress, nor the actual time when it is ended. Better tell him days after the last dose, and then the assurance that so long a time has gone since his enemy was routed will of itself be an aid in the good work.

As regards the mode of taking, a radical change is made. If hypodermically, the syringe is discarded, and a sufficient amount of morphine or opium given by mouth. In most cases this can be done at once. If not, their use causing nausea, vomiting, or headache, the usual method can be resumed for four or five days, and then, the bromide influence having been secured in part, the syringe may be put aside.

Patients taking 10 grains or more daily subcutaneously will usually get along with the same amount by mouth. Under that, an increase of one-half or double is needed.

Some may demur to the change, but it should be insisted on, for experience has proven many points in its favor. There is, we believe, often a fascination about the syringe, which, once ended, marks an advance towards success. Many patients come to think the injections essential, and to convince them to the contrary, as the change in taking will, gives them a feeling of gladsome relief and larger confidence in a happy result.

Again, the *staying* power, so to speak, of morphine or opium by mouth is much greater. The effect hypodermically is quicker and more decided, but earlier subsides,—a higher acme sooner reached and ended; whereas, by mouth or with opium, the rousing effect is slower, but more even and persistent. Patients injecting four to eight times daily will often do well on two or three doses by mouth.

As a rule, too, the change in taking brings a betterment in the patient's condition, notably increased appetite and improved alvine action.

During the decrease they are permitted, if desired, to continue their frequency of taking. As a rule, however, for reason given, it is not required. The only restriction imposed is that a certain supply shall suffice for twenty-four hours, and this is daily decreased at such rate as will least likely conflict with their comfort. Patients, moreover, are always told that if the amount allowed is not enough, they are to apply for and will be given more. Such being the case, no proper motive exists for secret taking, and if, despite this liberal proviso, it is indulged in, professional relations are suspended.

Clandestine taking, before or after withdrawal, can always be detected. The absence of certain sequelæ of an honest quitting, and the infallible test of a two days' vigil, furnish proof beyond dispute.

The usual duration of treatment in simple cases under our care is four weeks, the rule being to dismiss patient, if other conditions favor, after he has been able to sleep each night, for a week, without hypnotic. Erlenmeyer, whose method is rapid reduction, though without the valued aid of preliminary sedation, says, "Three or four weeks are generally sufficient to remain in the institute; the sojourn may be longer than this, but should not be less." This, of course, refers to the period of active medical care. The need and importance of further hygienic measures we have noted, and they are absolutely essential to insure a lasting cure.

Levinstein advised: "As soon as the patient has consented to give up his personal liberty, and the treatment is about to commence, he is to be shown into the room set apart for him for the period of eight to fourteen days, all opportunities for attempting suicide having been removed from them. Doors and windows must not move on hinges, but on pivots; must have neither handles, nor bolts, nor keys, being so constructed that the patients can neither open nor shut them. Hooks for looking-glasses, for clothes, and curtains must be removed. The bedroom, for the sake of control, is to have only the most necessary furniture,—a bed, devoid of protruding bedposts, a couch, an open wash-stand, a table furnished with alcoholic stimulants, champagne, port wine, brandy, ice in small pieces, and a tea-urn with the necessary implements. In the room which is to serve as a residence for the medical attendant for the first three days, the following drugs are to be kept under lock and key: a solution of morphine of two per cent., chloroform, ether, ammonia, liq. ammon. anis., mustard, an ice-bag, and an electric induction apparatus. A bath-room may adjoin these two apartments. During the first four or five days of the abstinence, the patient must be constantly watched by two female nurses."

Why this rigorous *régime?* Because the lack of efficient medical measures makes essential physical force. Because the method entails such distress of mind and body as to risk a suicidal ending; and a calamity always impends,—collapse, that threatens life, and demands that the doctor be closely at hand to avert the dreaded danger.

In contrast with this, during our opiate withdrawal, patients are permitted and encouraged to go out and about, attend entertainments and engage in social pleasures, and this is continued throughout the treatment, save a transient suspension after the first twenty-four hours of abstinence.

Following the first day of opiate-disusing, during the rest time of treatment, patients are for a while under special attention, and, if needed, an attendant is with them, but the need for such service is usually limited, and, in some cases, not required. Again and again have patients presented who feared the torture imposed by Levinstein, but were happily surprised to find it not demanded, and fully convinced, before treatment ended, it was not essential.

In this day of advanced therapeutics, the writer thinks it wrong, grievously wrong, more, it is *cruel*, to demand that they shall run the gauntlet of such suffering. We care not who advocates it, but speak feelingly, emphatically, and advisedly on this point, for the simple reason that our experience proves, beyond all doubt, that the opium *habitué* can be brought out of his bondage without any such crucial suffering as that method of treatment entails.

Bartholow says, "Having had one experience of this kind, I shall not be again induced to repeat it, if for no other, for strictly humanitarian reasons, since the mental and physical sufferings are truly horrible."

Many so dread the ordeal of abrupt disusing, and, unaware that a more humane method is at command, they refuse to accept it, and, continuing their narcotic, bind all the more closely "the web that holds them fast as fate." Six years ago a medical gentleman, nine years addicted to morphine, 11 grains a day hypodermically, came under our care. Twelve years ago he first consulted us. During the interim he read Levinstein's book, and the dread of such suffering as that author's patients underwent was, he avowed, the reason for his delay in making an effort to quit the morphia. Finally, summoning sufficient courage, the trial was made, and with the most gratifying success, for, greatly to his surprise and pleasure, he made a notable good recovery, with so little nervous disturbance that not a single bath was called for nor an anodyne once demanded, and was dismissed on the twenty-sixth day of treatment. Commenting on his case, he declared the manner of his recovery seemed "almost miraculous," and asserted that had he ever thought so much could be accomplished at so little cost of time and discomfort, his effort years earlier would have been made. Later he wrote: "My own swift and easy passage of that 'one more river to cross' is an ever-recurring source of wonder and astonishment to me, and not a day passes, nor a morning comes, without a keen sense of exultation at my escape from the old slavery, a blessed freedom from the old self-accusing conscience, and a return of the old instinctive habit of looking every man straight in the eyes. I think I shall never entirely get rid of a certain shadow of the past. Nearly nine years of mental distress, which I thought well-nigh hopeless, must leave a deep and ugly scar at my time of life, but thank God that I have only the scar to trouble my memory, and not the festering, corroding, ever-present ulcer which made me unspeakably wretched and kept me in continual fear of discovery. With an unexpected restoration of complete physical and mental vigor, the ugly past experience seems like a horrid nightmare, in which, just as I was toppling over the brink of the precipice, a friendly hand grabbed me in time to save from destruction. The shock and mental strain were too great not to leave an indelible impression upon the mind, but the wound has healed kindly, and only a scar remains to mar the fair proportions of restored self-respect and to modify somewhat the exultation over the recovered '*mens sana in corpore sano.*'" This gentleman is now, and has been for six years, in perfect health.

CACTUS GRANDIFLORUS IN HEART-DISEASE.

By J. E. Engstad, M.D., Grand Forks, N. D.

I HAVE prescribed cactus grandiflorus in heart-troubles to a considerable extent for the last four years, and I now depend on it in preference to digitalis in functional disorders.

As far as I am aware, the regular medical profession has to a certain extent discarded the use of this excellent remedy. There are

number of roads to Rome, and there may a number of remedies that answer to a certain degree the same purpose that cactus does; but in some functional diseases it is superior to the other heart stimulants. The homœopathists and eclectics use it before digitalis and strophanthus, and have done so for years. The homœopathic literature is very rich in "provings" and experience.

It is difficult to obtain a good specimen, as most of the fluid extracts on the market are worthless and inert. Merck and Parke, Davis & Co. make excellent preparations.

I have in mind a case of a young law student, who complained of palpitation of the heart while walking or exercising in the gymnasium.

His pulse would intermit every third beat while standing. If sitting, the heart would miss every fourth beat. If recumbent in bed he would not be troubled by any sense of suffocation as he was while standing, and the heart would be very regular.

I gave him fluid extract of cactus, 15-drop doses, three times a day. The functional disturbance was soon relieved. After discontinuing the use of the medicine for some time he suffered a relapse, which was again speedily relieved by the use of the cactus. No organic lesion was present.

I now recall a case of effusion in the pericardial sac. All known remedies had been tried except cactus. After using it for some time he recovered completely, as he thought. But a "conquering hero," in the form of a travelling doctor, informed him that he never had any heart-disease, and that heavy work was what he needed. He had been advised to the contrary by myself and other physicians. He worked one week, and then I was called. Enormous dilatation, respiration labored, expression pale and anxious; pulse weak, 32 per minute, but quite regular. I gave cactus for the heart, together with other treatment. Compensation has now taken place, and he expresses himself as feeling as strong as before the organic defect was first noted.

Recently I had a lingering case of typhoid pneumonia in a lady of 35. Her heart became feeble after the second week. Digitalis and strychnine were tried without any benefit. Cactus stimulated it immediately. She made a good recovery.

In convalescence from typhoid fever it is excellent in cases where the heart shows symptoms of failing. Some time ago I had a case where the patient was so weak and his heart so overtasked that a feeling of syncope appeared if the head was raised from the pillow. Cactus was given with benefit.

Its special field is in functional disorders, as in angina pectoris, where it is almost a specific. I have never been disappointed in its results. I may probably in the future meet with cases that will not be amenable by treatment, but thus far angina pectoris has been easy to relieve by the use of the remedy.

The dose I have found to answer the best purpose, and where the best results have been obtained, is about 8 or 10 drops of the fluid extract, or 15 drops of Merck's tincture, three to four times a day.

BROMOFORM IN WHOOPING-COUGH.

DR. HUGO LÖWENTHAL, of Professor Senator's clinic in Berlin, has tried bromoform in the treatment of whooping-cough, it having been recommended by Dr. Stepp, of Nürnberg, and he is disposed to agree with him in considering it a very valuable remedy. Dr. Löwenthal says that it exerts an almost specific action upon whooping-cough, at all events, if it is used at the commencement. A hundred children were treated with it, varying in age from 8 weeks to 7 years. The doses given were from 2 to 5 drops three or four times a day. The liquid was simply dropped into a tablespoonful of water, and formed a bead floating in the water. The quantity dispensed at once was about a drachm. The parents were cautioned to keep the bromoform from the light, as otherwise it is liable to be decomposed. As a rule, the good effects of the medicine began to show themselves on the second or third day, the vomiting being arrested within a week after the commencement of the bromoform. In cases where complications, such as pneumonia, occurred, they ran a favorable course, and where there were relapses, a return to the bromoform soon arrested the symptoms. In a very few cases the drug appeared to produce sleepiness and lassitude, and in one case, that of a weakly child a little over a year old, where a drachm had been given in the course of three days, a semicomatose condition was induced. Subcutaneous injections of ether revived the child, who was found to have pneumonia. This, however, ran a rapid and favorable course, and afterwards the whooping-cough was successfully treated by renewed doses of bromoform.—*Lancet*, July 19, 1890.

The Therapeutic Gazette

EDITED BY

ROBERT MEADE SMITH, A.M., M.D.,
Professor of Comparative Physiology, University of Pennsylvania,
PHILADELPHIA.

GEO. S. DAVIS,
Medical Publisher, Box 470,
DETROIT, MICH.
Philadelphia, 714 Filbert Street.

SUBSCRIPTION RATES FOR 1890.

(Journal increased to 72 pages each month.)

THERAPEUTIC GAZETTE (postage included).....$2.00
THERAPEUTIC GAZETTE with MEDICAL AGE..... 2.50
THERAPEUTIC GAZETTE with AMERICAN LANCET 3.25
THERAPEUTIC GAZETTE with AGE and LANCET... 4.00

Foreign subscriptions may be ordered through our agent in England, Mr. H. K. Lewis, Medical Publisher and Bookseller, 136 Gower Street, London. Price 10s. Remittances may be made either by Postal Order or Stamps.

Price to Foreign Subscribers direct (postage included), $2.50 (10 shillings). English postage stamps received on remittances.

Editorial communications should be addressed 332 South Twenty-first Street, Philadelphia. Articles intended for the Original Department of the GAZETTE will be accepted only with the understanding that they are contributed to it exclusively.

Business communications should be addressed to the Publishers.

Leading Articles.

DEATH OF DR. WILLIAM BRODIE.

DR. WILLIAM BRODIE, formerly editor of the THERAPEUTIC GAZETTE, died at his home in Detroit, Mich., on July 30 last.

Dr. Brodie was born at Fawley Court, Buckinghamshire, England, July 28, 1823, and at the time of his decease had just entered upon his sixty-eighth year.

In 1833 he emigrated to America, settling on a farm near Rochester, N. Y. Later on he entered and through his own efforts maintained himself at Brockport College. Here he remained three years, graduating with honors. In 1847 he removed to Michigan, where, in the office of Dr. Wilson, of Pontiac, he began the study of medicine. He then returned to the East and entered Berkshire Medical College; later he entered the College of Physicians and Surgeons, New York, from which he graduated in 1850. Returning to Michigan, he settled at Detroit, and at once obtained the position of house surgeon at St. Mary's Hospital. Dr. Brodie was also examining physician for St. Andrew's and St. George's Societies. In 1855 and 1856 he was secretary of the American Medical Association. At this period Dr. Brodie edited the *Peninsular Journal of Medicine.*

At the outbreak of the late Civil War he was appointed surgeon to the First Regiment Michigan Volunteer Infantry; subsequently he was appointed brigade surgeon, and soon after returned to Detroit.

In November, 1851, Dr. Brodie married at Pontiac Miss Jane Whitfield, a native of Hampshire, England. They have two sons and one daughter. Dr. Brodie has been a life-long member of the Episcopal Church.

From 1866 to 1871, and from 1887 until incapacitated by his last illness, Dr. Brodie was a most efficient member of the Board of Health. Since 1873 he has acted as surgeon to the Fire Department, a position he held at the time of his death. In 1885 he was chosen a trustee of the Detroit Medical College, also filling the chair of *emeritus* professor of the principles and practice of medicine and clinical medicine.

Dr. Brodie was at different periods the presiding officer of the Michigan State Medical and Wayne County Medical Societies; in 1887 he was president of the American Medical Association, and the same year first vice-president of the Ninth International Medical Congress.

Twelve years ago Dr. Brodie assumed editorial charge of the predecessor of the GAZETTE, which was then known as *New Preparations*, a weekly journal devoted to the consideration of the drugs of more recent introduction into the materia medica. Dr. Brodie at once enlarged the scope of its usefulness, and while still devoting especial attention to the newer remedies, made it also a journal of general therapeutics. After one year's existence the name of the journal was changed to the THERAPEUTIC GAZETTE, as indicative of the wider field it covered and the abandonment of its original *raison d'être.* That Dr. Brodie succeeded in establishing the position of the GAZETTE as an independent journal, one appreciated and needed by the profession, is shown by the subscription-list, which during his editorial management increased from less than one thousand to eleven thousand five hundred *bona fide* subscribers. We cannot but feel that the continued prosperity of the GAZETTE under the management of Dr. Wood, and now under the present editor, is mainly due to a close following of the policy mapped out by Dr. Brodie.

The death of Dr. Brodie will come with the shock of a personal bereavement to a much wider circle than his immediate family. Few had a greater list of acquaintances, no one more loving friends. Although he relinquished with his editorial work the onerous duties also of the practising physician, he still kept a warm interest in the doings of the medical world, while his unfailing good nature, rare attainments, and warm heart endeared him to all who came in contact with him.

DIURETIC PROPERTIES OF THE ELDER (*SAMBUCUS NIGRA*).

THE elder is a remedy which possessed great repute among the ancients; the Greeks and Romans employed it in a number of affections, especially when they desired to produce diuresis or catharsis, and both Theophrastus and Hippocrates speak of its efficacy in the treatment of dropsies. Pliny, the elder, also recognized its diuretic properties, as was the case with Dioscorides, Galen, and Avicenna. Even up to the end of the eighteenth century elder was employed as a diuretic, and Sydenham insisted upon its value as a specific in ascites and œdema.

The properties of the elder, however, gradually passed into oblivion, until its action was reinvestigated by Martin Solon (1832). He confirmed Sydenham's experiments, but again his results attracted no attention, and the elder as a drug has now become almost obsolete, being employed only as a household remedy, where it still possesses a certain amount of reputation as a remedy for dropsy and constipation. There are several varieties of elder, of which the *Sambucus Nigra* and *Sambucus Canadensis* are best known, the latter being indigenous to America from the range of the Carolinas as far as Texas, while the *Sambucus Nigra* is the common elder of Europe.

The flowers, the berries, and the inner and outer barks all possess active properties, and as testimony seems to be almost unanimous as to the existence of diuretic properties, it is surprising that the remedy has been neglected.

In November, 1889, Dr. Combemale reported before the Société de Biologie a series of experiments which he had undertaken with the elder, and which clearly demonstrated the existence of marked diuretic properties, and his experiments afforded the only truly scientific research as to its clinical uses with which we are acquainted, until Dr. Georges Lémoine published a long essay, as to its properties and uses, in the *Gazette Médicale de Paris*, No. 24, 1890. He shows that the effects of the inner and outer barks are different, the former being the more active, although its properties differ accordingly as to whether it has been treated with warm or cold water. The fresh bark only, he finds, should be employed, and in Combemale's experiment he used a watery extract, administered by the stomach. Combemale likewise administered a decoction of both barks to guinea-pigs, and found that a marked diuretic action was produced, lasting for about four hours; while a dog, to whom the same decoction was administered, not only showed marked increase in the amount of urine passed, but there was also noted a diminution in the temperature and the frequency of the pulse and respiration. The inner bark contains a volatile principle, and likewise, when administered in the form of a decoction, produces diuresis in doses of a drachm for every two pounds of body-weight, while the temperature at first is increased and then gradually descends below normal, the pulse likewise being retarded. If the volatile principle of the elder be not displaced, as in the production of a decoction, and a maceration of the elder bark be employed, it would seem that the volatile principle interferes to a certain extent with the production of diuresis, and then nausea and vomiting frequently follow its ingestion, with abundant diarrhœa, the temperature being reduced and the pulse likewise retarded.

Dr. Lémoine applied these physiological results so obtained by Combemale to a series of clinical observations, and was able to confirm the experience of the older observers as to the production of diuresis by its employment in ascites and anasarca. Dr. Lémoine always employed the fresh inner bark, a large handful being placed in a quart and a half of water, which was then boiled down to about a quart. This decoction was then sweetened with sugar and aromatized with mint, and was administered to the patient in about twenty-four hours, a new decoction being made each day. Dr. Lémoine states that he has never observed any vomiting following the employment of elder-bark, nor has he ever seen it produce sweating, one of the properties which was attributed by the ancients to elder, while with but few exceptions there was in all cases marked diuresis, followed within two or three days by liquid stools.

He concludes that the elder so employed as a diuretic is of the utmost value, and may yield the most valuable services in the treatment of ascites and anasarca, consecutive to diseases of the heart and kidneys. Under its use he has seen the quantity of urine increased nearly eightfold, and this large amount maintained almost as long as the remedy was being administered. So also when its effects commence to decline, the diarrhœa also, which assists in the reduction of ascites, likewise diminishes. Dr. Lémoine principally employed the elder in nephritis, especially in the acute congestive form; its action then being more rapidly produced than in chronic Bright's disease. The first case in which he employed it was that of a woman, 32 years of age, who, as a consequence of improper use of a catheter, acquired cystitis and ascending infectious nephritis. There was considerable anasarca, the peritoneum and pleura contained liquid, and the patient was in danger of dying from œdema of the lungs. After only the first day's use of a decoction of elder-bark the urine nearly doubled, while on the fourth day nearly ten times as much urine was passed as at first. The anasarca rapidly diminished, and it was not until the cellular tissues were entirely free from effusion that the quantity of urine and the number of diarrhœic stools were reduced.

Two other cases also of acute nephritis are alluded to in which the results were equally satisfactory, but in six cases where nephritis was of long standing the effects were less apparent, although even there diuresis was increased and œdema somewhat reduced. This amelioration was, however, only transient, and the effusion rapidly accumulated as soon as the use of the elder bark was suspended. Dr. Lémoine states that in the œdema, in consequence of heart-disease, the elder will likewise in the majority of cases produce improvement through its action on the kidneys and the intestine. Especially in cases where there is fatty heart, and where digitalis cannot be supported, elder-bark will render great service as a diuretic.

Finally, it is said to be entirely innocuous, and is, therefore, preferable to cardiac remedies. It would seem to act solely on the kidneys, for Dr. Lémoine states that it in no way modifies the activity of the heart or the circulation, and would thus seem to be a simple diuretic, producing filtration of the urine by an irritation of the renal epithelium. Nevertheless, he states that this action is accompanied by no unfavorable changes in the character of the renal cells, for after having given it for more than a week to a guinea-pig, microscopic examination of the kidneys showed no organic change. So also in the case of an ovarian cyst, the abdominal ascites was reduced under its employment, to return after its administration was stopped.

The elder is thus a remedy which seems unworthy of the neglect into which it has fallen. It would be interesting to have a confirmation of Dr. Lémoine's results, while experiments are highly desirable as to the exact mode of action of this remedy, and as to which of the different principles found in it its properties are attributable.

SOME NEW REMEDIES FOR WHOOPING-COUGH.

GENSER was one of the first to apply antipyrin to the treatment of whooping-cough. He gives the results of one hundred and twenty cases; the average duration was twenty-four days, instead of from sixty to ninety, the ordinary term. As many decigrammes (1½ grains) were administered daily as the child was years old (*Wiener Medizinische Presse*, 1888).

Dubousquet-Laborderie obtained similar results in fifteen cases; there was marked diminution in the frequency and severity of the paroxysms, and the period of decline announced itself much sooner than ordinarily (*Bulletin Général de Thérapeutique*, t. cxiv. p. 385).

Sonnenberger tried antipyrin in seventy cases of whooping-cough; to young infants he gave it in doses of ½ to 1½ grains three times a day; to older children, from 3 to 15 grains. He also records marked alleviation of the attacks and shortening of the duration of the disease (*Lancet*, March 3, 1888, p. 437).

Antipyrin is, however, by no means always innocuous when administered to children, and some cases of poisoning have been reported. Rothe, having met with some unfortunate results from antipyrin, made trial of a combination of iodine with carbolic acid, and claims great success from this combination in the treatment of whooping-cough. He says that he has treated hundreds of cases, and cannot remember one in which the affection lasted longer than four weeks. The mixture he employs is as follows: Acid. carbolic., gr. xv; sp. vin. rect., gr. xv; tinct. iod., gtt. x; tinct. bellad., gtt. xxx; aquæ menth.

pip., ʒii; syrup. opiat., gr. cl. A teaspoonful of this is given to children over two years of age every two hours (*Lancet*, April 6, 1889, p. 701).

Acetanilide (antifebrin) has been used with advantage as a nerve sedative and antispasmodic in whooping-cough. At the meeting of the American Medical Association, held in Newport, R. I. (*Medical Record*, July 6, 1889, p. 21), Dr. Love, of St. Louis, spoke of the treatment of fifty cases of whooping-cough by acetanilide, and regarded it as a valuable remedy; and in a report of cases observed at the New England Hospital during the years 1888 and 1889, Dr. Kate C. Hurd alluded to "the remarkable benefits of acetanilide in pertussis." It "both mitigates the paroxysms and shortens the duration of the disease." The dose is from ½ to 5 grains three times a day, according to the age of the child.

A writer in the *Lancet* asks the question whether phenacetin is a remedy in whooping-cough, and Dr. R. Heimann answers the question affirmatively, having used the drug experimentally in a case in which antipyrin entirely failed. The success was so surprising that he administered phenacetin in two other cases. It reduced the number of paroxysms, which had been from ten to fifteen per diem, to three, and on some days they entirely ceased, only reappearing at night, when no phenacetin was given. The dose for a child 3 years of age would be 1½ grains every three hours (*Lancet*, October 19, 1889, p. 811).

Sulphurous acid fumigations have been recently tried in whooping-cough at the Charity Hospital, at the New England and other hospitals. Manby relates, in the *Practitioner* for August, 1888, his experience with sulphurous acid, which has given him great satisfaction. The method is as follows: "The children are in the morning put into clean clothes and removed elsewhere. All their clothes and toys, etc., are brought into their bedroom, and sulphur is burnt upon a few live coals in the middle of the room. The fire is allowed to remain in the room for five hours, and then the windows and doors are thrown open. The child sleeps in the room the same evening. About twenty-five grammes of sulphur to every cubic metre may be burned; this is equivalent to rather more than ten grains per cubic foot. The room is fumigated in like manner during the night, the children practically living in an atmosphere of diluted sulphurous acid gas for some days, while in some cases the process is repeated at the end of a week" (*Medical Record*, August 25, 1888, p. 215).

Weisberger, in the *Bulletin Général de Thérapeutique*, April 15, 1890, speaks enthusiastically of this remedy. He causes to be burned, morning and evening, in the room of the child ten grammes of sulphur, and subjects the child for an hour to the fumes. The gas produced by the combustion of this quantity of sulphur is not sufficiently concentrated to cause more than a slight irritation in the nose and throat.

Recently a new remedy—*ouabaïne*—has come into vogue. In the THERAPEUTIC GAZETTE for June (p. 411) will be found a full summary of all that is known of this new remedy and its uses in whooping-cough. Ouabaïne is, however, a dangerous remedy to give, and as the dose is necessarily very small, great care is needed in its management. Terpine, according to Talamon (*La Médecine Moderne*, July 24, 1890) is a much safer medicament. In children under a year old, according to Manassé, it may be prescribed in the dose of 5 grains three or four times a day. It diminishes the violence and duration of the paroxysms, and hastens the cure of the concomitant bronchitis. Talamon would counsel somewhat smaller doses (10 to 15 grains a day for an adult), though he thinks that larger doses may be safely given. He regards the employment of terpine in whooping-cough as "rational." It acts "as a calmer of the nervous system; it modifies at the same time the bronchial secretions, which it dries up; it has also antiseptic properties, which enable it to act not only on the symptoms, but on the course of the whooping-cough."

Of all the newer remedies, Talamon would give the preference to terpine, especially if the pertussis is accompanied by an abundant catarrhal secretion. The following formula, in which terpine is associated with antipyrin, is recommended:

Terpine, 1 to 1.50 grammes;
Antipyrin, 1 gramme;
Syrup of orange-peel, 50 grammes;
Linden-water (or mucilage), 60 grammes.

Dose.—From 1 to 2 teaspoonfuls several times a day to a child of from 1 to 4 years of age.

OREXIN AGAIN.

CONTINUED study of orexin only serves to confirm the opinion which we expressed in regard to this substance in several late numbers of the GAZETTE as to its almost

absolute inertness. The last contribution to the subject is by Dr. Edward Reichmann. He writes that soon after the publication of Penzoldt's results he commenced to experiment with this substance in the clinic of Dr. Riegel, in Giessen, and he publishes his results in the *Deutsche Medicinische Wochenschrift* for July 31, 1890.

Dr. Reichmann administered the remedy to thirty six different patients, in doses varying from 4 grains, given once or twice daily, up to 7½ grains, given in one dose in gelatin capsules, its administration being followed, as recommended by Penzoldt, by a large amount of water. The greatest care was taken to avoid any psychical influence being produced which might obscure the true action of the drug, and his results, although by no means as favorable as those of Penzoldt's, are yet not quite so unfavorable as those of Imrèdi's, Martin's, and Mühler's, already published in the GAZETTE. He states that a distinct increase of the appetite was produced in five cases, while a less marked influence was produced in eleven patients, observable after the first few doses had been administered. In twenty other cases no effect whatever was observable, in some nausea and vomiting being produced, though in no case of a severe character. Investigation of the contents of the stomach, after the administration of orexin, was made in six different cases, and the results in this respect seemed to confirm Penzoldt's statement, in that there was an increase in the amount of hydrochloric acid present. Of course, it is very difficult to decide as to what the actual position of any new remedy is, and we must admit that one or two positive statements by unbiased observers as to the effect of a remedy are worth many negative results. In the case of orexin, however, the mass of testimony certainly is against the claim advanced by Penzoldt as to its great power as a stomachic, though it, like so many other substances, might, in a few cases, produce relief.

Dr. Podgorski, in experiments made in the Krakau Hospital (*Deutsche Medizinal-Zeitung*, July 31, 1890), has likewise been able to confirm the claim of Penzoldt that the administration of this remedy in a fasting condition produces an increase in the amount of acid in the gastric juice, and he likewise claims that in certain instances it produced transient improvement in the appetite, in a few cases produced vomiting, while in by far the majority of cases it was entirely without any action. Further, Dr. Imrèdi, in the *Munch. Medic. Wochenschrift*, No. 17, 1890, likewise failed to produce any favorable effects in its employment, although its administration was in many cases followed by nausea and vomiting. Finally, Belalmrèdi (*Les Nouveaux Remèdes*, July 21, 1890) claims that, out of twelve cases, in seven there was some improvement in the appetite, while in five no benefit was produced.

It certainly looks now as if Penzoldt's effects, who is the only enthusiastic advocate of the properties of orexin, were attributable to the extract of gentian with which he combined it.

THE TREATMENT OF CHRONIC BRIGHT'S DISEASE.

WHATEVER theory may be held as to the unicity or duality of Bright's disease in general, and whatever may be known respecting the etiology of the particular case which the physician has before him, the treatment must be mainly symptomatic. This is apparent from the permanency of the lesions of which the symptoms are an expression. A treatment based on etiological considerations might, indeed, by suppressing the cause, prevent any further extension of the mischief; thus, if there should be a history of lead poisoning in the patient and saturnine nephritis, one might, by preventing any further absorption of lead, be able to spare such portions of the kidneys as had hitherto escaped the destructive influence, but this is all that could be expected of etiological therapeutics. The older writers, regarding the indication as plain to attack the element of inflammation, advised the moderate and judicious use of antiphlogistics, such as leeches, cups, and even mercury (Dr. Geo. B. Wood). It is needless to say that mercury is now never given, at least for any direct effect on the disease-processes, and that cups over the lumbar region are seldom employed, even in the acute exacerbations.

To combat the albuminuria, recent authorities counsel the exclusion of albuminoids from the ingesta. By permitting an animalized diet, they say, we produce an augmentation of the albuminuria, and injure the epithelia of the canaliculi abnormally traversed by the albumen and globulin of the blood. The loss of albumen by the renal secretion is, however, as Senator has shown, a matter of trifling importance as compared with the damage likely to be done to the still permea

ble portions of the renal filter by overworking them; and there is good evidence that an excess of azotized ingesta irritates the kidney and raises arterial tension, in both these ways rendering the condition of the patient worse.*

There is general agreement that milk constitutes the ideal food in albuminuria. It is easily digestible; if fresh and pure, it contains no waste materials of disassimilation, no poisonous ptomaïnes to irritate and overtax the epithelium of the canaliculi; all the nitrogen which it contains is utilizable; it is rich in fat, and it is diuretic, by the latter fact favoring depuration through the damaged tubuli. Under a milk diet, coincidently with diminution of albumen, there is increase in the excretion of urea and other natural products of the renal secretion, and this is of the utmost importance in a disease in which renal insufficiency is the principal danger.

The milk diet may be absolute, mitigated, or mixed (to use terms current with foreign writers). Absolute milk diet consists in the daily administration of three or four quarts of milk, to the exclusion of all other food. The milk may be taken sometimes raw, sometimes boiled, cold or warm, sweetened or not, according to the liking of the patient, and flavored, to suit the taste, with cognac, cherry laurel, anisette, or other aromatic substances. A half-pint every two hours during the day and night is as much as most patients will tolerate; this, if continued three or four days, is generally attended with marked polyuria and mitigation of the dropsical, uræmic, and other bad symptoms.

In the "mitigated" milk diet, the quantity of milk is reduced to one or two quarts, and gruel, porridge, rice, tapioca, custards, etc., are given in addition.

The mixed diet consists in the addition of a variable quantity of milk to the ordinary diet. The patient may drink freely of milk, with the meals and between meals; in some cases he may make only one meal of solid food a day (in the morning), taking nothing but milk during the rest of the day.

Most authorities oppose the use of eggs, whether raw or cooked, in the dietary of Bright's disease. Eggs, doubtless, often augment the albuminuria. However, we find Oertel, Schreiber, and Klemperer insisting on their general innocuousness. Klemperer declares that he has never seen the albumen of the ingesta produce an augmentation of the albuminuria.†

The fact is, as Lecorché and Talamon have pointed out,‡ that "the general rules of dietetics, on which almost everybody is agreed, cannot be carried out in an absolute and uniform manner in all periods of the disease, and, in their application, we must take account not only of the state of the kidney, but also and especially of the state of the digestive functions and of the general nutrition. We know that a highly azotized diet augments, while a milk diet diminishes, the proportion of albumen in the urine. But we will now and then have a patient whose stomach does not digest milk, and his albuminuria will be aggravated under a too-severely imposed milk regimen, while another with good digestion will peptonize and digest the albumen of eggs without detriment to the renal filter. Another patient whose forces are exhausted by debilitating habits of living will have his heart fortified and his nutritive powers raised by a judicious dietary, of which animal food and eggs shall constitute a principal part." This seems to be a common-sense view of the case.

Those who have read the articles by Dujardin-Beaumetz "On Vegetarianism from a Therapeutic Point of View," in the March number, and "On the Treatment of Renal Insufficiency," in the July number of the THERAPEUTIC GAZETTE, cannot fail to have been impressed by the arguments which are advanced in favor of a vegetable diet in

* "It is certain that these albuminoid substances, even when normally peptonized, absorbed, and transformed, convey into the circulation an abnormal quantity of urea, of uric acid, and of extractive matters, whose incessant elimination by the kidneys is sure in the long run to alter the renal filter. Atrophic gouty nephritis has no other cause than this continued excretion of an abnormal quantity of uric acid. But every kind of exclusive diet ends in fatiguing the stomach and vitiating its function. What, then, becomes of the peptonization of this excess of azotized matters? It remains incomplete. Now, the researches of Voit, of Eichorst, etc., show that peptonization is not indispensable to the intestinal absorption of certain albuminoid substances. Therefore, being absorbed unchanged, or after an insufficient digestion, in the state of hemialbuminose or of imperfect peptones, those substances are indisputably a cause of irritation to the kidney; and we have shown that a great many cases of Bright's disease, to which it is impossible to attach a clearly evident etiology, have probably no other cause than the prolonged and incessant elimination of the products of a vitiated digestion."—Lecorché and Talamon, "Traité de l'Albuminurie," etc., p. 631.

† "Discussion at the Ninth Congress of Internal Medicine, held in Vienna, April 15–18, 1890."

‡ "Traité de l'Albuminurie et du Mal de Bright's," p. 630. Paris, 1889.

Bright's disease. The same views are advocated by Senator and Von Ziemssen (and other speakers) in their addresses delivered at the late Vienna Congress, and by Lépine at the Berlin Congress, all of whom insist that cereals, vegetables, and fruits, joined to fats and milk, should suffice for the diet of the albuminuric. Senator urges the avoidance of hearty meals. As for drinks, there is general agreement that alcoholic stimulants are to be interdicted, as they tend to congest the kidney; at the most, a little red wine, especially of those kinds that contain considerable tannin, may be permitted.

There is often an indication for the promotion of diaphoresis, both to favor elimination by the skin, and thus relieve the kidneys of a part of their burden, and to improve the circulatory energies. The safest and mildest mode of sudation is, doubtless, the hot-air or vapor bath. Ziemssen counsels the use of these baths at home, limiting them to twenty or twenty-five minutes' duration, followed by dry wrappings or the wet pack. In cases of actual uræmic poisoning these vapor baths or the full warm bath should be resorted to at once in conjunction with free catharsis.

As for muscular exercise, this should be very moderate, for reasons that are sufficiently plain; all exercise should, in fact, stop short of fatigue. Passive exercise, in the form of massage, may be practised within due bounds. It is almost needless to say that mild laxatives may be needed to insure regular action of the bowels, that warm clothing, to protect from changes of the weather, is necessary, and that much rest in bed should be enjoined.

Uræmic symptoms may at any time appear. This is especially likely to be the case when much of the secreting substance is damaged or destroyed, and when from overwork or overeating the metabolism of albuminoids is exaggerated beyond the ability of the kidney to remove the effete products and toxines. Here prompt, thorough derivation by the bowels may be demanded; a compound jalap powder or an elaterium purge may spare the engorged kidneys and cause a flux by the intestines that will tide the patient over the present danger.

As for diuretics, there seems to be less tendency than formerly to resort to them as routine means of treatment. Certainly those diuretics that irritate the canalicular epithelium, such as the resins and balsams, cantharides, strophanthus, and squills, are not to be thought of. The cardiac diuretics are only to be prescribed when there are symptoms of failing heart, while the alkaline mineral waters, broom-top, and corn-silk may be used with safety. Lépine speaks highly of the crystallized digitalin in the dose of 1 milligramme. This dose, however, he would only give every other day. Caffeine, in the dose of 5 grains three times a day (preferably by hypodermic injection), and the salicylate of theobromine, 15 grains three times a day, are recommended as safe diuretics. These diuretics are especially indicated when the patient is "water-logged" in the advanced stages of parenchymatous nephritis, when also the hydragogue cathartics may be needed. Senator has found calomel of no efficacy in the œdema of Bright's disease.

In interstitial nephritis, remedies that lower arterial tension, like nitroglycerin, nitrite of soda, and iodide of potassium have been found beneficial.

As for the medicinal treatment generally in chronic forms of the disease, there was general agreement among the speakers at both Congresses that not too much is to be expected. "Astringents, experimented with in cases of nephritis of parasitic origin, have failed; fuchsine has given continual disappointment; arsenic and boric acid, ferruginous preparations, have given no results to all those who have taken pains not to allow themselves to be deceived by observation of the variations which the march of the disease habitually presents."

Reports on Therapeutic Progress.

THE EXCRETION OF BALSAMS IN THE URINE.

The use which is now being made of balsam of Peru in the treatment of tubercular disease has aroused considerable interest in the question as to whether it is apt to produce nephritis during its excretion by the kidneys. Dr. Ralph Stockman, research scholar of the British Medical Association, has made a number of observations on it and other balsams with the view of determining this, and the results of these are published in the *British Medical Journal* for June 14, 1890.

Strictly speaking, the term "balsam" should be confined to resins and oleo-resins which contain cinnamic or benzoic acid or both, and hence, although commonly used, it is not properly applicable to simple oleo-resins,

such as Canada balsam or balsam of copaiba. The observations were carried out on Dr. S. W. Carruthers, on the author, and on rabbits, and were limited to the four balsams in the British Pharmacopœia,—namely, balsam of Peru, balsam of tolu, prepared styrax, and benzoin.

Balsam of Peru.—Balsam of Peru contains about thirty per cent. of resin, sixty per cent. of volatile oil, six per cent. of cinnamic and some benzoic acid. It has hitherto been chiefly used in scabies as an inunction, either in its natural form or diluted with alcohol, but lately Landerer has praised it highly as an external and internal remedy in tubercular affections. He used it as an intravenous injection (emulsion of 1 in 400), and externally in ethereal solution, or as a plaster, or pure. Opitz has also reported very favorably of it in phthisis pulmonum, his method of employing it being in the form of subcutaneous injection,—balsam of Peru, two grammes; water and gum acacia, of each one gramme; three-fourths per cent. salt solution to ten cubic centimetres; neutralize with sodium bicarbonate and sterilize by heating; dose, a syringeful twice weekly. It caused some pain and swelling locally.

Regarding nephritis after balsam of Peru, cases have been reported by Litten and by Vamossy. In Litten's case the patient was treated with inunctions of balsam of Peru for scabies, and after some days developed dropsy and albuminuria, with blood in the urine and tube-casts. After recovery, 20 grammes were rubbed into his skin on several occasions, and each time caused an attack of acute nephritis. Other patients and rabbits treated with the same balsam of Peru did not suffer in any way. Litten ascribes the result to an idiosyncrasy, but the most probable explanation is to be found in the fact that the man had suffered for some time from lead-poisoning, that changes were probably beginning in his kidneys, and that this rendered them peculiarly sensitive to any irritant.

Vamossy has used balsam of Peru, in the form of gauze, plaster, and emulsion, for the treatment of local tuberculosis. It was tried in twenty-eight cases, mostly severe, with good results. In four of these cases Vamossy states that albuminuria occurred, but he gives no account of how he tested for the albumen, which, as we shall see later on, is a very important point.

Brautigam and Nowack have recently administered balsam of Peru in large doses to men (up to 11 grammes per day by the stomach and 125 grammes in two days by inunction) without in any case producing albuminuria or tube-casts.

The experiments which the author made on himself bear out their observations. After taking smaller doses without any result, he swallowed 180 minims (14 grammes) between 11 A.M. and 5 P.M.

The urine on being tested with cold nitric acid, or on heating after acidifying, gave no precipitate. At three and five o'clock it contained a large quantity of hippuric acid, but no albumen. The only effects noted were loss of appetite, and once or twice slight colic.

With rabbits, although there is no albuminuria, the results were not so negative. 2 drachms (9 grammes) were given by the stomach to a large rabbit. The urine of next day was clear, straw-colored, and had no special odor. On applying the nitric-acid tests for albumen in the usual way, it gave precipitates exactly resembling those of albumen. The precipitate was, however, soluble in alcohol and in excess of acid, thus proving that it could not be albumen.

The reactions were as follows:

Urine + nitric acid = dense white precip., sol. excess acid, sol. alcohol.

Urine + sulphuric acid = dense white precip., sol. excess acid, sol. alcohol. It soon assumed a purplish-red color, gradually deepening to black.

Urine + hydrochloric acid = dense white precip., sol. excess, sol. alcohol.

Urine + acetic acid = very faint precip., sol. alcohol.

Urine + boiling with drop nitric acid = dense white precip., sol. excess acid, sol. alcohol.

Dr. Stockman was unable to obtain a sufficient quantity of the substance to examine it minutely, but there is no doubt that the resin of the Peru balsam is excreted by the kidneys, dissolved in the urine (probably in combination with glycuronic acid), and that it is precipitated by the addition of an acid. A similar condition has long been known in man, in the case of copaiba and cubebs. Its non-occurrence in man after balsam of Peru is probably explained by too small doses having been given. The urine may be left for many days exposed to the air without undergoing decomposition.

4 drachms (18 grammes) given to a rabbit by the stomach gave similar results, and no albuminuria.

Prepared Styrax.—Styrax is also a mixture of resin, volatile oil, and cinnamic acid, and is used in scabies and other parasitic skin-diseases. The only account of nephritis after its use is given by Unna. He was in the habit of treating his scabies patients with the following mixture: Styrax, oil of rape, of each 10 parts; spirit, 1 part. It was rubbed in thrice all over the body, a bath was then taken, and the cure was complete. In examining the urine, he boiled it with nitric acid, and no further control tests were used. Out of one hundred and twenty-four cases, the urine of nine gave an abundant precipitate. In all these the urine was clear; there was no blood-corpuscles and no tube-casts. He remarks that it is peculiar that a comparatively large amount of albumen should rapidly appear in the urine, and then as rapidly disappear without causing further symptoms. He had no suspicion that it could be anything but albumen. The results of Dr. Stockman's experiments on rabbits show, however, that it was a resinous body, which had become absorbed through the skin and excreted in the urine.

After taking a mixture of styrax, alcohol, and glycerin in different doses without any result, he swallowed one hundred and eighty grains (about twelve grammes) in four doses between eleven and two o'clock. The urine remained quite clear, and gave no precipitate with nitric acid; at five, seven, and eleven o'clock it contained large quantities of hippuric acid, but no albumen.

A rabbit received 1 drachm in olive oil, and a few drops in alcohol, by the stomach. Next day the urine was quite clear, and gave the following reactions:

Urine + nitric acid = dense white precip., sol. excess acid, sol. alcohol and ether.

Urine + sulphuric acid = dense white precip., sol. excess, sol. alcohol. Became deep red and then black.

Urine + hydrochloric acid = dense white precip., sol. excess acid, sol. alcohol.

Urine + acetic acid = very faint precip., sol. excess acid, sol. alcohol.

Urine + boiling with drop nitric acid = dense white precip., sol. excess, sol. alcohol.

5 drachms (about 20 grammes) gave the same result, and no albuminuria.

It is evident from the solubility in alcohol that here also we have to deal with a resin excreted in the urine and not with albumen.

Benzoin.—Benzoin contains eighty per cent. of resin and a small amount of volatile oil, with cinnamic and benzoic acids. Dr. Carruthers took in capsules from forty to one hundred and forty grains in twenty-four hours, without causing any very distinct changes in the urine. On two occasions there was faint opalescence with acids which cleared up on the addition of alcohol, but it was very difficult to decide whether it was caused by a resinous body or not.

Rabbits received up to two drachms, in glycerin and alcohol, but here also the results were negative. Owing to the difficulty of dissolving it in suitable menstrua, it was found impossible to give larger doses.

Balsam of Tolu.—The tincture (1 in 8) is given internally as an expectorant. The syrup, which contains only 1 part in 29, is too weak to be of much value except as a flavoring agent. Dr. Carruthers took up to one hundred and twenty-four grains in twenty-four hours. There was always a good deal of hippuric acid in the urine, but no resin could be detected. Owing to the difficulty of getting a suitable solution, it could not be administered to rabbits in a sufficiently large dose for the purpose of the research.

As a result of these observations, it seems to be proved that all those balsams can be given in as large a dose as is ever desired in practice, without any risk of producing albuminuria or nephritis. The amount of irritation which they cause is never sufficient to injure the healthy kidney, although it may irritate seriously one which is already diseased. In some (at least) of the recorded cases of albuminuria, after the administration of balsams, a resinous body in the urine has been mistaken for albumen.

SUSCEPTIBILITY TO THE EXTERNAL EMPLOYMENT OF TANNIC ACID.

In a recent issue of the GAZETTE we alluded to a case reported by Dr. Lange, in which the application of a solution of tannic acid to the pharynx produced serious œdema of the larynx, and the production of marked general urticaria and great prostration. In the *Deutsche Medicinische Wochenschrift*, No. 12, 1890, DR. SCHRAMM reports an analogous case. It was that of a man, 53 years of age, affected with chronic nasal catarrh, who was extremely hypochondriacal and timid. Dr. Schramm prescribed nasal douches, which the patient administered to himself at first with a weak soda solution and then with one which contained one part of tannic acid with three hundred of water. After the fir

employment of the tannic acid solution, the patient complained of violent pain in the head and complete obstruction of the nose. Although there was great depression there was no trace of any exanthema. As the alkaline douches which were then substituted for the tannic acid produced no improvement in the local condition, Dr. Schramm then again employed a tannic acid solution, 1 to 500, and again its use was followed by the same accidents, although at this time there was a general eruption of urticaria produced. The employment of tannic acid had then to be abandoned, and cauterization by nitrate of silver was employed, and was well supported by the patient.

PILOCARPINE AS AN ANTAGONIST TO BELLADONNA.

In the *Lancet* for July 26, 1890, Dr. William McGowan writes that a little before noon on December 25, 1889, he was called to visit a married woman, aged about 37, who was said to be dying from having taken a quantity of a liniment by mistake for a dose of a mixture she had been ordered.

On examining the bottle, it was found that she had taken a large tablespoonful of belladonna liniment, and her condition was at that time very serious. She was totally unconscious and breathing stertorously; there were frequently recurring convulsions; the pupils were widely dilated, so that there was only a ring of iris, and they were not influenced by light; the extremities were cold, the heart greatly excited and weak, and the pulse scarcely perceptible at the wrist. She presented all the appearances of approaching death. Some attempt had been made before the writer's arrival to procure vomiting, but without success. As she could not swallow, Dr. McGowan injected $\frac{1}{10}$ of a grain of apomorphine. This failed to produce vomiting, and, fearing the depressing effect sometimes produced by the drug, he did not repeat it, but at once introduced the tube of the stomach-pump, and thoroughly washed out the stomach. The stomach was almost empty, and no odor of belladonna could be detected in the water returning from it. He then injected hypodermically $\frac{1}{3}$ of a grain of pilocarpine, passed the catheter, and withdrew nearly a pint of urine, injected a pint of strong hot coffee into the rectum, and used flagellation with a wet towel over the chest and cheeks, and mustard was applied to the calves of the legs. In about half an hour improvement was observed; her countenance became more natural. A little later she looked about her, and was soon able to swallow small quantities of sal volatile and coffee. About five hours later, Dr. McGowan, on returning, found the patient sitting up in bed, in a rather excited condition, and talking deliriously. The author injected another third of a grain of pilocarpine. It did not at any time produce perspiration, but only a little softness of the skin. From this time recovery was uninterrupted. She complained of thirst and dryness of the throat, and remained very weak, being unable to get up for nearly a week.

This case is worthy of record, on account of the apparently antagonistic influence of the pilocarpine to the belladonna. As over four hours had elapsed from the time the poison was taken until Dr. McGowan saw her, the belladonna must have been entirely absorbed, as, indeed, was clear from the absence of odor of belladonna in the washings of the stomach, and from the very marked and characteristic effects. Although he used the stomach-pump, he does not attach much importance to this part of the means adopted.

THE TREATMENT OF SYPHILIS BY SUBCUTANEOUS INJECTION OF MERCURIAL PREPARATIONS.

Dr. Leloir and Dr. Tavernier, of Paris, having practised this method of treating syphilis in all sorts of syphilitic cases during two years, now (*Giorn. Ital. d. Mal. Ven. e. del Pelle*, 1889, xxiv. 247) give a statistical report of their experience and a summary of their conclusions (*New York Medical Journal*, August 9, 1890). In all they made fifteen hundred and seventy-three injections. Of these, eight hundred and seventy-five were of 1 part calomel to 12 parts liquid vaseline, a half Pravaz syringeful being thrown into the sacro-lumbar muscles, and repeated once a week; six hundred and forty-two were of the yellow oxide of mercury, prepared and used in the same manner as the calomel; and fifty-six were of "gray oil," consisting of 20 parts of pure mercury, 40 parts of liquid vaseline, and 5 parts of the ethereal tincture of benzoin, of which a third of a syringeful was injected every ninth day. They found, 1, that these injections acted specially upon the erythematous syphilide and upon the secondary cutaneous eruptions; 2, that the injections of calomel and of the yellow oxide, especially the first, often caused

these eruptions to disappear with a surprising rapidity, or, as they named it, a "true brutality;" 3, that the calomel acts most intensely, and the gray oil least; 4, that all three are much more energetic in their effects than any internal method of medication, though much rougher; 5, that their action on syphilides of the mucous membrane, especially mucous patches, is very slight, and, even while the injections are being practised, numerous mucous patches will appear; 6, that their action upon tertiary syphilides is very uncertain, as they very often resist the injections and have to be treated by inunctions and the local application of mercury. The principal *inconveniences* from this method of medication are the following: 1. The local or radiating pain caused by them, sometimes most violent, and capable at times of preventing walking. This may last from one to nine or more days. 2. Paralysis of the lower extremities. 3. Vertigo and headache. 4. Eruption of mucous patches in the mouth on the fourth or fifth day after the injection. 5. A mercurial dermatitis about the point of the injection. 6. Mercurial stomatitis, often slight, sometimes severe and long-continued. 7. A simple or bloody diarrhœa some time during the interval between the injections. 8. Non-suppurating cutaneous tumors, sometimes filled with a reddish serum. The treatment met with much opposition in hospital practice, many patients preferring to leave the hospital rather than submit to it. Relapses seemed to be more frequent and precocious in cases treated by this method than in those treated by mercurial inunctions. The calomel injections produced the greatest number of disorders. The gray oil is the most inoffensive, but also the least active. The practical deductions from their experience are: 1. The use of subcutaneous injections of mercury should be limited to the early eruptions on the skin. 2. They may be resorted to when it is necessary to produce a very rapid effect on these eruptions. 3. They are specially, if not exclusively, applicable to hospital patients, or to those who can remain in bed for a few days. 4. It is a good means for treating prostitutes. 5. Its action upon mucous patches is very bad. 6. It does not prevent relapses. 7. In many cases it fails to cure, and recourse must be had to inunctions. 8. It should not be used against the late syphilides except in those exceptional cases in which it is necessary to use mercury internally at the same time with its local use and the administration of the iodide of potassium. 9. It is contraindicated in cerebral and spinal syphilis, in visceral syphilis, in pregnant women, and in infants. The only advantage of the method is the rapidity of its action. But this advantage is more than balanced by its inconveniences.

SUGAR IN THE BLOOD.

The condition known as melitæmia, or the presence of sugar in the blood, has long been recognized. Pavy, Ewald, Seegen, and Otto have demonstrated beyond doubt that sugar is a normal constituent of the blood, although it is present only in very small proportions; the quantity is not altered when the blood is analyzed after death. The proportion of sugar in the blood is considerably raised in cases of diabetes. In 1885, Freund examined the blood of seventy patients suffering from carcinoma, and found it to contain a large quantity of sugar, but he was unable to detect it in cases of sarcoma. Freund's experiments have not been fully verified by other observers. In the *Centralblatt für die Medicinischen Wissenschaften*, 1890, No. 25, TRINKLER gives an interesting account of a series of observations he has made as regards the amount of sugar contained in the blood in various diseases. He examined the blood of one hundred and nine patients, and the investigation fell into two classes: 1. Quantitative estimation of sugar and reducing substances in the blood during life, the quantity of blood required being obtained during the performance of operations. 2. In which the greater number of analyses took place after death. The diseases from which the patients were suffering were carcinoma, typhoid fever, pneumonia, morbus cordis, dysentery, peritonitis, nephritis, uræmia, etc. Sugar was found to be present in all the cases. In carcinoma the amount was very large, next came typhoid fever and pneumonia, while nephritis and uræmia exhibited the least. In the case of carcinoma, the following conclusions could be drawn: 1. The blood of patients suffering from carcinoma always contained a considerable percentage of reducing substances, of which the chief was grape-sugar. 2. The maximum percentage of sugar in the blood of living patients was less than the maximum obtained after death. 3. Carcinoma affecting the internal organs produced a greater quantity of sugar than when attacking superficial structures (skin, mucous membranes). 4. The degree of cachexia stood in no direct proportion to the percentage of sugar in t

blood. The quantity of sugar in acute pneumonia, typhoid fever, and dysentery was about the same, and very little above the normal; while in nephritis, and especially in uræmic conditions, the quantity was below the normal.—*Lancet*, July 26, 1890.

ICHTHYOL IN DISEASES OF WOMEN.

According to the Berlin correspondent of the *Medical Press and Circular* for July 23, 1890, DR. H. W. FREUND, of Strasburg, recommends ichthyol as useful, both externally and internally, in a number of the sexual diseases of women, especially those of inflammatory origin. In his hands it has proved more efficacious and more rapid in its action than any other remedy. It has also the useful effect of quickly relieving the pain that accompanies pelvic inflammations. In chronic parametritis, chronic and subacute perimetritis, in inflammation of the tubes and ovaries, in erosions of the os, and in pruritus of the external genitals, it is capable of bringing about a quite surprisingly rapid and complete cure. Internally, he gives the ichthyol in doses of .1 gramme, or a grain and a half in pill three times a day to commence with, and later in doubled doses. Externally, he employs a mixture of ichthyol 5 parts and glycerin 100 parts, on tampons of cotton introduced into the vagina. When energetic resorption is demanded, he employs the ichthyol with equal parts of lanolin or with green soap, 8 parts of ichthyol and 80 of soft soap, rubbed over the abdominal walls. He also uses it in the form of suppository, .5 to .2 gramme. In the case of erosions, he has painted the pure sulpho-ichthyolate of ammonia on the os and cervix, and has observed very rapid healing. In pruritus he uses it in the form of the ointment (ichthyol 10 parts, lanolin 90 parts, is a very good form, corr.), or a ten per cent. aqueous solution. The digestion improves under its use. The results of its intravaginal application are, according to Dr. Freund, positively astounding. Thick cicatrices in the laquear disappeared in the course of a few days, parametric cicatrices thinned down and became less rigid, tubal pains diminished, etc. The pain-relieving quality of the ichthyol was quite as remarkable as its very unusual one of promoting absorption. No ill effects were ever observed. The author acknowledges, however, that there are cases where ichthyol alone does not suffice to bring about the desired result, but other methods of treatment must be put into use in its support. Thus, when the pain is very great and the case permits, he uses tampons, which contain from two to five per cent. of chloral hydrate in the glycerin employed, and goes on to the ichthyol after the pain has subsided. And again, after resorption has taken place, he leaves off the ichthyol and passes on to massage or electricity. Very obstinate and even desperate cases should not be submitted to operation until a trial has been given to ichthyol.

THALLIN IN TYPHOID FEVER.

DR. F. SCHMIDT, in his graduation thesis at Berne in 1889, reports the results which he obtained in the employment of thallin in twenty-two cases of typhoid fever, the remedy being given in doses varying from ¾ to 3 grains in a day, with nothing given at night. The following are his conclusions (*Les Nouveaux Remèdes*, July 24, 1890):

1. The mortality of typhoid fever treated by thallin is less than that obtainable by any other mode of treatment.

2. Thallin, in the doses above mentioned, distinctly reduces the temperature in cases of moderate intensity, but in typhoid fever of extreme gravity this dose is insufficient. It also would seem that the patients support thallin better than cold baths.

3. In general the duration of the disease is not diminished, although this effect would appear to occur in a few isolated cases.

4. No unfavorable secondary action was noted either on the heart or lungs. There was no collapse or irritation of the kidneys. Nevertheless, basing his conclusions on the results obtained by other authors, Schmidt advises the withholding of thallin in all cases where renal lesions have been detected.

5. Thallin maintains a favorable influence on the sensorium in all cases of typhoid fever except those of extreme gravity.

6. Complications and relapses are not prevented by the use of thallin any more than by any other form of treatment.

7. If it is impossible to discover any specific action of thallin on typhoid fever, at least it would appear that certain effects exist which render this action probable.

Finally, the author considers the treatment by thallin in the majority of cases as in no respect inferior to that of cold baths, and in cases where there is a rapid progress of the

disease would even seem superior. After having analyzed the thesis of Schmidt, Rutimeyer adds that he has never observed collapse even after doses considered excessive, even more than 7½ grains being given. In this amount thallin appears to clear the brain in severe as well as in the milder forms of typhoid fever.

OBSERVATIONS ON THE PROPORTIONS OF THE CHIEF PROTEIDS OCCURRING IN THE URINE IN VARIOUS FORMS OF ALBUMINURIA.

In the *British Medical Journal* for July 26, 1890, DR. NOEL PATON and MESSRS. JOHN DOUGLAS and RONALD MACKENZIE publish an elaborate analysis of the different proportions of the more important proteids occurring in the urine in various forms of albuminuria. They conclude with the following summary of their results:

1. Senator was right in the conclusion that, in all cases of albuminuria, both of the chief proteids of the blood plasma are present.

2. The proportions of serum albumen and serum-globulin may vary within wide limits, the quotient of the amount of serum-albumen divided by the amount of serum-globulin being sometimes as low as .6, sometimes as high even as 39.

3. In acute nephritis, when blood is absent, the quotient is high. When hæmoglobin is present, the globulin is, of course, in excess.

4. As the disease becomes more chronic the quotient sinks, and in the terminal stages of the disease may sink as low as .6. This alteration depends upon the condition of the patient rather than upon the state of the kidney, and is probably related to a similar change in the blood plasma.

5. Amyloid disease cannot be distinguished from the ordinary forms of chronic nephritis by the high proportion of serum-globulin, as was formerly maintained by Senator.

6. Maguire's suggestion that functional albuminuria is characterized by the high proportion of serum-globulin is not correct.

7. In every case the proportion of the proteids to one another varies much in the course of the day, and in comparing the proportion of these proteids in different cases it is necessary to examine specimens of the mixed urine of the twenty-four hours, and to take into account the nature of the diet.

8. The proportion of serum-globulin is always highest during the night. It falls greatly after breakfast, when it reaches its lowest point in the twenty-four hours. In most cases it again rises in the evening. The precise connection of the alteration in this proportion with the taking of food cannot be considered as definitely settled.

9. Milk diet, as observed by Lecorché and Telamon, has a peculiar effect in increasing the proportion of serum-albumen.

10. The amount of proteids passed appears to bear a tolerably direct proportion to the amount of proteids taken, and, excluding milk diet, the increase of the proteids in the urine on a diet rich in these substances appears to be chiefly due to an increase in the serum-albumen.

11. The variations in the proportion of the albumen to the globulin in the urine is frequently so great that we can hardly believe that it is connected with a similar change in the plasma. The few experiments we have performed would suggest that a high pressure favors the transudation of serum-albumen, while a low pressure increases the proportion of globulin transuded.

COTO BARK AND COTOINE IN THE TREATMENT OF DIARRHŒA.

Coto bark possesses in Bolivia considerable reputation as a remedy in the treatment of acute rheumatism and diarrhœa. It occurs in the form of long reddish rolls, whose odor and appearance closely resemble those of cinnamon. Administered internally in excessive quantities it produces gastric pain and vomiting, attributable to the acrid resins and essential oils which it contains. The alkaloid cotoine is also found in the coto bark, as well as leucotine and hydrocotoine; the former crystallizes in yellowish needles, resembling gallic acid, fusible at 130°, soluble in alcohol, chloroform, ether, and the bisulphide of carbon, though but little soluble in petroleum or benzine; it dissolves in alkalies with the formation of yellowish color, in sulphuric acid with a yellowish-brown color, in nitric acid with a blood-red color. It is antiseptic and arrests putrefaction; it is said to stimulate the appetite in doses of from 2 3 grains. Its principal therapeutic value is, however, almost universally admitted to be the power which it possesses of arresting diarrhœa, being especially efficacious in the diarrhœas of phthisis, gouty diarrhœa, and in the diarrhœa of children.

A number of preparations have been employed, of which the tincture, the wine, the powder, and the extract may be mentioned,

hough it is preferable to administer the alka-id cotoine in doses of from 3 to 9 grains ach day. Hypodermic injections of cotoine issolved in acetic ether (1 part in 4) have een proposed, but these injections cannot be ecommended on account of the severe pain hich their employment produces.—*Journal le Médecine de Paris*, July 27, 1890.

TOPICAL ACTION OF DRUGS ON SECRETION.

According to the Berlin correspondent of he *Medical Press and Circular* for July 30, 890, Dr. Emil Schütz, of Prague, who has een studying the action of certain drugs in rresting or diminishing, or increasing the ecretory activity of glands, finds that a large umber of substances—among the metallic alts, acetate of lead, nitrate of silver, sul-hate of copper; among the acids, hydro-hloric and sulphuric, and tannin, applied to he skin or mucous membranes of frogs—have he effect of diminishing the secretion, this ction lasting for hours or even days. The hlorides of potassium and barium act in a imilar manner; almost all these substances ossess the property of precipitating globu-in, even in extreme dilution. The alkalies, lkaline earths, the alkaline and neutral salts f the alkalies, and numerous other sub-tances, such as glycerin, carbonic acid, mus-ard seed oil, phenol, if applied at a proper egree of concentration, act in an opposite anner, and increase the secretion. In both ases the effect is independent of the nervous nd vascular system, and depends on the se-reting elements only.

SALICYLATE OF THEOBROMINE.

As the result of the labors of different in-estigators, already referred to in the Thera-peutic Gazette, as to the diuretic action of heobromine, a discussion has been evoked as to whether theobromine may be combined with salicylic acid or not.

Dr. Sée affirms that this is not possible, and that the substance in the market under the name of "diuretin" is a body soluble in water, and is a mixture only of theobromine and the salicylate of sodium (*Les Nouveaux Remèdes*, July, 1890). It is further stated that theobromine is absolutely insoluble in cold solutions of salicylate of sodium, and the same likewise applies to the mixture of theobromine and salicylic acid. Even when a solution is obtained by heat, precipitation comes on cooling. Sée has, however, been able to obtain a solution without heat by treating theobromine with dilute caustic soda, and by then adding salicylate of sodium or salicylic acid. This, however, gives a product which is by no means fitted for internal use, on account of the high degree of alkalinity of the solution.

EXCISION OF THE OPTIC NERVE AND AVOIDANCE OF ENUCLEATION.

A proposal has recently been made by M. Abadie to prevent sympathetic ophthalmitis by sterilizing the injured eye, by injecting into it a few drops of a solution of corrosive sublimate. The theory on which this proposal rests is, of course, that sympathetic inflammation is a septic process, due to the passage of microbes along the lymph spaces of the optic nerves and chiasma. While accepting the theory, we demurred to the practice, on the ground that it is not possible effectively to sterilize the contents of an eyeball without using an agent which would destroy the vitality of the tissues, and that it was, therefore, better either to remove the globe altogether, or to remove the contents of the sclerotic, and sterilize its cavity.

A lengthy paper in the *Klinische Monatsblätter* for June (*British Medical Journal*, July 19, 1890), by Dr. Otto Scheffels, urges the claims of another substitute for nucleation,—namely, resection of the optic nerve. This is in no sense an outcome of the septic theory of causation, as it is merely a further development of simple neurotomy, which was originally instituted when it was believed that the ciliary nerves formed the communicating medium for the transmission of sympathetic affections. It is now maintained that this practice is in perfect harmony with the septic theory; indeed, the author, to whom we have just referred, considers that the success of this operation in preventing sympathetic inflammation, should it be confirmed by a larger number of cases, is itself to be considered as a proof of the correctness of the theory. The reservation is an important one, as it is impossible to form any notion as to what number of cases would be necessary to prove that it affords absolute immunity. But even were this proved, we fail to see what support would be given to the septic theory, for the ciliary nerves are necessarily divided at the same time, and, as it is at least as likely that

lymph channels should be restored as nerves, the success of the operation would be quite as much in favor of the ciliary nerve theory as of the bacterial.

The author considers that if seven and a half millimetres of the optic nerve with its sheaths are excised, it is impossible that the lymph channels should be restored, and that the gap will form a gulf which the microbes cannot pass. Both these assumptions are, it seems to us, gratuitous. We are not aware of any experiments or observations bearing on the restoration of divided lymph channels, and, as Dr. Scheffels quotes none, we presume he is in the same condition; but, as no profound change takes place, as far as can be seen, in the nutrition of the eye, it is not unreasonable to suppose that the lymphatic circulation is carried on somehow. Because we know little about the habit of these microbes, every one thinks himself at liberty to attribute to them the virtues and impotences that best accord with his own views, but we are not acquainted with any evidence, apart from that afforded by the few recorded cases of neurectomy, and this is of the weakest description, that microbes cannot extend through seven and a half millimetres of cellular tissue, even though the main lymph-channels have been excised.

If the bacterial theory can be proved by other means, and for our part we consider that the evidences in support of it are exceeding strong, then a large number of neurectomies would go far to prove that exsection of a portion of the optic nerve does form a barrier to the progress of microbes, but considering the risks run, such a wholesale clinical experiment would in our opinion be wholly unjustifiable, at any rate until the probability of success has been demonstrated by experiments on animals.

The operation, however, has a definite field of usefulness. When an eye is blind and painful, and is causing sympathetic irritation of the other eye, while from the nature of the case there is no fear of sympathetic ophthalmitis, neurectomy may be useful as a substitute for enucleation, and, as far as is known, it is always successful.

The operation itself presents no insuperable difficulties, although we think that the author makes too light of the trouble arising at the time of the operation from hemorrhage into Tenon's capsule. On two occasions we have seen this entirely prevent reduction of the globe, so that enucleation had to be performed. The internal rectus is sutured and divided, the nerve felt for and divided as far back as possible; the distal end is then seized and its sclerotic attachment brought into the wound, where it is cut off as close to the globe as possible. Finally, the divided muscle is united by means of sutures left in it for the purpose.

Simple neurotomy, although it has been quite successful in many such cases, has in some proved to be of only temporary benefit, owing to the reunion of the divided nerves. It is, however, a comparatively simple operation, and might in many cases be tried first, neurectomy being reserved for recurrent symptoms.

So, also, according to the Paris correspondent of the *Lancet* (July 19, 1890), in a note by Dr. Galezowski, the well-known ophthalmologist, the author expressed it as his opinion that it was possible to avoid the enucleation of the globe of a lost eye and to leave it in the orbit, at the same time avoiding the dangers of sympathetic ophthalmia. He realizes this by suppressing all the anatomical relations of the diseased eye. The operation is performed in the following manner: He incises the conjunctiva and the capsule, draws forward the globe of the eye, partially divides the optic nerve, and excises all the nerves and the vessels which surround the eyeball, leaving all the muscles intact, and the operation is terminated by reuniting the conjunctiva. In a case thus treated the result is said to have been excellent.

THE CHEMISTRY OF THE GASTRIC JUICE AS AN ELEMENT IN DIAGNOSIS AND THERAPEUTIC INDICATION.

At the meeting of the Société Médicale des Hôpitaux, held July 17, 1890, Dr. Hayem read a paper relating his work as to the value of chemical examination of the contents of the stomach as an element in diagnosis and as a means of forming proper methods in therapeutics (*Le Progrès Médical*, July 26, 1890; *La France Médicale*, July 25, 1890). Basing his results on the quantity of the different chemical elements in the gastric juice already established in a healthy individual, he divides cases of dyspepsia into three groups.

In the first he ranges those which have a functional irritation of the stomach, characterized by an increase in the quantity of chloride present, hydrochloric acid, and total acids in which there is an exaggeration of

he work of the stomach, and which he terms condition of hypopepsia.

In the second class are found the dyspeptics in whom there is a reduction in all the constituents which should be normally found, and which may go on almost to the condition which he terms apepsia, and this class usually combines the majority of stomach dyspeptics.

The third class is formed by the smaller number of dyspeptics, in whom the chemical composition of the gastric juice is but slightly modified, and in whom the disturbance depends upon mechanical or nervous trouble. He further divides the first class into four different types.

1. The gravest, in which there is interference with digestion due to an excess of the total acidity, and this causes severe pain and rapid loss of flesh, and often, even although the patient may have a large appetite and be abundantly fed. In them there is apt to be also dilatation of the stomach.

In the second type there is usually gastrorrhœa.

In the third type hyperpepsia is a prominent feature, and there is increase in the total amount of acid and of the chloride.

The fourth type is characterized by the presence of fermentative acids, and the patients are generally of a highly nervous character. The second class comprises at the same time feeble digestion, with dilatation of the stomach and neurasthenia, with either excess or deficiency of hydrogen.

The second type of hypopepsia is dependent upon a reduction of the total acidity, and here digestion is null, even though there be an abundance of the gastric juice, the peptones being feeble.

In the third type of dyspepsia, apepsia, there is apparent suppression of all the functions.

Dr. Hayem promises to communicate in a short time the application of these deductions to therapeutics, when we will lay his conclusions before the readers of the GAZETTE.

THE EXCRETION OF MERCURY IN RELATION TO THE VARIOUS METHODS OF ITS EMPLOYMENT.

In the *Medical Press and Circular* for July 30, 1890, the Berlin correspondent states that DR. RUDOLPH WINTERNITZ, who has been studying this subject in Professor Neisser's clinic at Breslau, has lately given us some of the results of his investigations in an article in the *Arch. f. Dermat. und Syph.* In order to get an insight into the subject, it was, first of all, desirable to determine accurately the quantity of mercury in the tissues at varying periods after the administration of fixed quantities. This could only be done on the bodies of animals, and, in fact, it presented such difficulties, that he contented himself, as regards the present undertaking, with testing the quantity of mercury contained in the urine of patients taking it in any way, and in this way drawing his conclusions as to the rate of absorption. His investigation showed that, as regards the excretion by the urine, the method of interstitial injection was far beyond all others. After the injection of insoluble salts of mercury as much as four to eight milligrammes per day were found in some cases. He could not determine whether the symptoms of intoxication went parallel with a diminution in the excretion of the drug. Increased excretion of mercury was not effected by iodide of potassium in doses of even 2 to 3 grammes. No difference as regards excretion by the urine was observed between the insoluble salts, calomel, salicylate of mercury, and the soluble preparations. A parallelism between the quantity introduced and the curative effect was shown by the quantity excreted, whether the mode of administration was by the mouth, subcutaneous injection or local epidermic inunction, or plaster.

THE VALUE OF THE DIFFERENT HYPNOTICS.

The therapeutic committee, of which DR. T. LAUDER BRUNTON is chairman, appointed by the British Medical Association to determine the relative utility of the different hypnotics, especially with relation to the certainty of their action and the question of the tolerance of the drug, publish their report in the *British Medical Journal* for July 26, 1890. Although the report contains but little that is to be regarded as entirely novel, every additional fact bearing on the value of the different substances discussed is, without doubt, worthy of notice, and we, therefore, reprint an abstract of the results obtained.

SULPHONAL.

1. Two cases of simple insomnia, aged 36 and 32. In the first case, insomnia had lasted eleven days; 20-grain dose of sulphonal every night for three days produced two hours' sleep five hours after taking the drug. Sleep was not very peaceful, and was fol-

lowed by a slight feeling of intoxication. In the second case, insomnia had lasted a month, and ammonium bromide, although useful at first, failed afterwards in doses of 40 grains. Sulphonal (20 grains) every morning for a month produced eight hours' natural sleep three hours after taking the drug. No bad after-effects (F. W. Burton).

In a case of neurasthenia and insomnia, which had lasted one or two years, in a medical man, bromides of potassium and ammonium produced a refreshing sleep, but caused great depression after a few days. Sulphonal (20 to 30 grains) two or three nights a week for three months produced, after three or four hours, six to nine hours' sound sleep. There was never any excitement, giddiness, headache, or inco-ordination of gait, but drowsiness followed sleep if 20 to 30 grains were taken as late as 9 or 10 P.M., but not if 10 to 20 grains were taken at 5 or 6 P.M. After using sulphonal as above described till the end of August, 1889, the patient went for a six weeks' holiday to Devonshire, and gave up hypnotics. During all the time the sleeplessness was very bad (not more than two to four hours' sleep a night). Then he returned to work for the winter, avoiding night work; and he began to take 10 grains of sulphonal regularly every evening. He thus secured five to six hours a night of fairly continuous sleep (his usual average in health is seven to eight hours); less than this always left him unrefreshed. In April, 1890, he again went for a holiday, this time travelling about the Highlands of Scotland. He still took 10 grains nightly; and from leaving home had very good nights, sleeping seven to nine or more hours soundly. On returning home after a month and resuming work, the average number of hours per night with 10 grains nightly again fell to five or six. The dose was increased to 20 grains per night, with the effect of raising the average to seven or eight hours. Now the dose has again been reduced to 10 grains, while sleep continues long and sound. No evil effects have been noted, no albuminuria or nervous symptoms, and the patient is certain that 10 to 20 grains nightly have a slight regulating effect on the bowels, acting like a small dose of sulphur. For six months now (June 9, 1890) sulphonal has been taken quite regularly, every night 10 grains, and occasionally 15 to 20 (J. Priestley, M.R.S.S.).

In a case of simple insomnia, which had lasted three months, in a woman seven and a half months' pregnant, 20 grains of bromide of potassium was at first useful, then failed. On two nights 20 grains of sulphonal were given; on the first night the patient slept for two hours, the effect coming on in thirty minutes; on the second night, in five minutes. The patient fell asleep, and remained so for eight hours. There were no bad after-effects following the first dose. On the day following the second dose the patient had repeatedly long sleeps, and suffered from giddiness and inco-ordination of gait, so marked as to alarm the patient's friends.

2. *Acute Fevers.*—In a case of enteric fever in a nurse, aged 24, in which insomnia had lasted two nights, sulphonal (25 grains) on three successive nights produced in two hours quiet sleep, lasting three hours and a half on the first occasion, eight hours on the second, and six on the third, with no bad after-effects. In two cases of typhus in young adults sulphonal was given. In the one in which sleeplessness had lasted one night, 25 grains each night for three nights produced, after two hours, six hours' sleep. There was no excitement or bad after-effects, but the patient talked during the sleep. In the other case, with two nights' sleeplessness, 25 grains in one dose were given for three nights. The first night patient was restless and delirious. He slept the second night, talking during the sleep; he slept on the third night without sulphonal; on the fourth night he had no sleep (no sulphonal), but on the fifth night slept three hours and a half after sulphonal. There were no bad after-effects. In a case of rheumatism with delirium, sulphonal, in 25, 30, and 40 grains, had no hypnotic effect, morphine being successful (Dr. Duffey).

In a case of pneumonia, insomnia had lasted during the whole of the attack. Bromide of potassium (20 grains), with nepenthe (20 minims) did not produce sleep. On the fifth night, sulphonal (15 grains) was given, producing no sleep; on the sixth and seventh nights, 25 grains, the first dose producing, after two hours, interrupted sleep during six hours and a half, the second dose of 25 grains having no effect whatever. The next night, a dose of 30 grains was given, causing two and a half hours' sound sleep, then irregular sleep for four hours. The following night a dose of 30 grains produced a short period of dozing after three hours. There were no bad after-effects. The crisis came after the first dose of 30 grains, and this was the only night the patient got any real sleep. The insomnia continued during convalescence, un-

influenced by bromide and nepenthe, or by bromide (30 grains) and chloral (20 grains) (E. Jackson).

3. *Plumbism.*—In a case of plumbism (insomnia eight days), sulphonal (30 grains) produced, after three hours, good sleep for four hours and a half. Slight inco-ordination of gait was noticed next day, with inclination to sleep, but no other after-effects (J. S. Short, M.D.).

In a second case of plumbism, with granular kidney and extremely high tension of the pulse, insomnia had lasted many weeks, and a drachm of sulphonal produced, in three-quarters of an hour, two hours' sleep. The patient woke up in dyspnœa, which lasted half an hour, but he then slept for two hours and a half. There were drowsiness, giddiness, and headache next day, but no vomiting or inco-ordination of gait (E. S. Reynolds).

4. *Gastric Catarrh.*—In one case with dilated stomach (a few days' insomnia) 40 grains of sulphonal produced, within half an hour, half an hours' sleep, and an irregular sleep for three hours and a half during the rest of the night. There was drowsiness the next day, and the patient was sleeping soundly at mid-day; the pupils were contracted, and she was very thirsty and suffered from headache (E. S. Reynolds).

In a second case, the patient had had, three years previously, an attack of insomnia, lasting eight months; the present attack was of three weeks' duration. Bromide of potassium (20 to 30 grains) had no effect, nor had 10 grains of pulv. ipecac. co.; nepenthe, 25 minims, gave two hours' sleep; sulphonal (20 grains) produced, after nine hours, a quiet and natural sleep, lasting four hours, with no bad after-effects. On another occasion, 30 grains, in five hours, produced five hours' dreamy sleep. There was slight drowsiness following, and very decided inco-ordination of gait until late in the afternoon. Insomnia disappeared when the patient went to the sea-side (E. Jackson).

5. *Heart Disease.*—In a case of mitral stenosis (insomnia four months), in which bromide had been tried, sulphonal (20 grains) every night produced in an hour sound and refreshing sleep for six hours and a half (A. Chaplin).

In a case of double mitral disease with cerebral embolism and delirium (insomnia six weeks), bromides (30 to 60 grains) produced quietness, but no sleep; sulphonal (20 and 40 grains) produced in three hours interrupted sleep for an hour or less, or no sleep at all. There was drowsiness next day (F. W. Burton).

6. *Lung-Disease.*—In a case of chronic bronchitis (insomnia for some months), sulphonal (20 grains) produced in half an hour to an hour sound sleep nearly all night. There was slight drowsiness next day, and giddiness on getting up, but no other bad after-effects (A. Chaplin).

In a case of asthma, chronic bronchitis, and emphysema (insomnia two months), sulphonal (20 grains every other night) produced, for the first three weeks, twelve hours' sound sleep, and the following five weeks only six hours. At first, sleep came on in an hour, but during the last five weeks only after three hours. At the end of the first three weeks the insomnia returned on discontinuing the drug, which had to be given again. There was a feeling of transient muddle next day, but no other bad effect (Dr. Maclure).

The drug was given in eleven cases of phthisis in patients varying in age from 16 to 47 years; the disease was active in all except one, in whom it was quiescent. In six cases insomnia had lasted from three weeks to eight months. Sulphonal (in 15 to 25 grains) was given in nine cases every other night, every third night, or once a week. In most cases the patients slept all night quietly. In one case 15 grains gave only four hours' sleep; in another, three hours. In two cases 10 grains gave a sound sleep all night. The effect came on soonest in twenty minutes (one case), but usually in an hour to three hours. In one case 5 grains was without any effect, except in producing sickness in the morning. Eight of the eleven cases suffered from drowsiness the next day. In one case drowsiness appeared after the effect of the drug was lost. In one case drowsiness appeared early in the case of treatment, and in one case late. Giddiness was noted in four out of the eleven cases.

PARALDEHYDE.

1. *Bright's Disease.*—In a case of granular contracted kidney, with headache and uræmic dyspnœa (insomnia fourteen days), 40 minims every night for three nights produced natural sleep within five minutes, and lasting three to six hours. In a second case of granular kidney with dilated heart, insomnia had lasted some weeks. 50 minims of paraldehyde produced, in fifteen minutes, two and a half hours' sleep; headache then came on, but the patient slept at intervals for three hours during the rest of the night. In another case of Bright's disease (insomnia some

weeks), 1 drachm of paraldehyde caused dozing for three hours, with restlessness; no actual sleep. In a case of Bright's disease, with bronchitis, dilated heart, and cardiac dyspnœa, 1 drachm in 1 hour caused two and a half hours' sleep, with a short interval of restlessness. The patient was dozing, but restless for the rest of the night. In these cases there were no bad after-effects (E. S. Reynolds).

2. *Aneurism.*—In a case of aortic aneurism (insomnia four days), 40 minims, in seven minutes, produced an easy sleep of five hours, with four periods of short duration of wakefulness. No bad after-effects.

3. *Heart-Disease.*—In a case of mitral stenosis (insomnia one month), paraldehyde was given in doses of 40 minims for three nights; then 1 drachm for two nights. The third administration of 40 minims produced no sleep, the second of 1 drachm also failed, and both these caused slight excitement. The other doses caused, in four to fifteen minutes, an easy sleep of two to five hours. Morphine succeeded well after paraldehyde had failed (F. W. Burton).

Double aortic disease and secondary mitral; irregular insomnia for several weeks. Paraldehyde (20 minims) every four hours for fourteen days produced better rest at night, but not continuous sleep. No drowsiness in the day and no bad after-effects (J. S. Short).

In a similar case, with slight insomnia, ½-drachm doses had a slight effect at first, but afterwards lost their power. Sleep was broken, and the patient vomited after one dose. In a case of double aortic disease, with periodic attacks of insomnia, ½-drachm doses every three hours produced in half an hour natural sleep lasting two hours. No bad after-effects (W. Bate).

In a case of mitral disease, with cerebral hemorrhage and dementia (insomnia some weeks), 50 minims in fifteen minutes produced over an hour's sleep; the patient was then awake for four hours, and was very irritable, but slept afterwards for two hours. In this 30 grains of chloralamide produced in fifteen minutes four and a half hours' sleep during the night, with two short intervals of great restlessness.

4. *Rheumatism.*—In a case of chronic rheumatism (insomnia some days), 50 minims of paraldehyde produced over six hours' sleep in the night, with intervals of wakefulness lasting half an hour (E. S. Reynolds).

5. *Lung Disease.*—Bronchitis, with laryngeal catarrh and dementia (insomnia three nights), 2 drachms were given three times. The first time sleep lasted forty-five minutes; the second time sixty minutes, coming on in half an hour. Sleep was restless. On another occasion, 2 drachms gave the patient an hour's sleep; three hours after waking up he had another drachm, and slept for four hours. On the next night, 20 grains each of potassium bromide and chloral-hydrate gave him seven hours' restless sleep (A. Hopkinson).

Bronchitis and dilated heart in an old man (insomnia for some days); 1 drachm caused a restless, irregular sleep for six hours and a half. In a case of pneumonia (insomnia some days), 50 minims caused six hours' very restless sleep, with an hour's interval of waking (E. S. Reynolds).

In a case of quiescent *phthisis*, with chronic bronchitis (insomnia for three months), sulphonal was given for six weeks in 20-grain doses, causing forty-six hours' sleep. The drug, however, lost its effect, and produced only drowsiness. Paraldehyde (40 minims) every night for three nights produced within fifteen minutes a natural refreshing sleep, lasting twelve hours. For one month, during which patient was observed, the insomnia did not return. The drug caused some nausea (Dr. Maclure).

In another case of active double phthisis, 40 minims produced in an hour natural sleep, lasting five hours. There was drowsiness and headache the next day. The second night the same dose produced only three hours' sleep; and on the third night the drug caused no sleep, and was discontinued, owing to the headache and drowsiness (Dr. Maclure).

In a case of phthisis (left apex) with insomnia of ten nights' duration, ½ drachm produced an irregular disturbed sleep, lasting all night. There was giddiness and morning retching, but no other bad after-effects. In another case (insomnia for some weeks), ½ drachm, repeated in two hours, produced, one hour and a half after the last dose, five hours' disturbed sleep in the first night, and six hours on the succeeding nights. There was drowsiness for an hour on awaking, and frontal headache for two hours (A. Chaplin).

URETHAN.

In a case of double aortic disease (insomnia four days), 10 grains of urethan caused in two hours a good sleep for three hours. There was drowsiness all next day and slight headache (J. S. Short).

CHLORALAMIDE.

1. *Bright's Disease; Plumbism.*—In a case of granular kidney (insomnia some days), chloralamide (30 grains) produced during the night nearly eight hours' sleep, with three intervals of fifteen to thirty minutes. The effect came on in fifteen minutes. In a second case of chronic plumbism, with granular kidney and high arterial tension (insomnia several weeks), sulphonal (60 grains) was given with good effect (see SULPHONAL—*Plumbism*). Chloralamide (30 grains) was given on three occasions, producing within an hour good sleep, lasting all night, with a few intervals of wakefulness. The effect, therefore, was better than that produced by sulphonal. In a second case of chronic plumbism, with granular kidney and dilated heart (insomnia some weeks), chloralamide (20 grains once) produced three hours' sleep during the night at long and irregular intervals.

2. In a case of diabetes, with bronchitis and dementia (insomnia some days), 30 grains of chloralamide caused in half an hour a sound sleep, lasting over five hours, with an interval of half an hour's wakefulness. In a case of paralysis from Pott's disease (insomnia some days), 30 grains in half an hour caused dozing, lasting an hour and a half, and with an interval of two and a half hours, sleep lasting two hours. There were no bad effects from any of the doses of chloralamide.

Sulphonal, Urethan, Paraldehyde, and other Hypnotics compared.—In a case of pernicious anæmia in a woman, aged 38, in whom insomnia had lasted several weeks, paraldehyde (50 minims) produced in a quarter of an hour sound sleep for three-quarters of an hour only, the patient vomiting on waking, but with no other bad effects. Sulphonal was given in 30-grain doses on two occasions. Sleep came on ten minutes after the first dose and lasted fifteen minutes; the patient was then restless till morning, when she slept several hours. On the second occasion sleep came on in three-quarters of an hour; the patient was then restless and talkative for an hour, and slept for three hours and a half. Drowsiness followed both doses. To the same patient, after paraldehyde had been tried, urethan (40 grains) was given once. In two hours patient slept for ten minutes; after an hour she slept an hour, and at another interval of an hour for half an hour. The sleep was restless, but there were no bad after-effects. Thirteen consecutive observations were made in this case on the effect of 30 grains of chloralamide given each night. Sleep was produced in one to two hours, and lasted more or less all night, with two or three intervals. On the ninth night patient did not sleep until 10 minims of Batley's solution were given. On the thirteenth night chloralamide produced as good an effect as when first given. The patient vomited after the first dose, but not afterwards, nor were any other bad effects noticed (E. S. Reynolds).

The action of these three hypnotics were also compared in a case of chronic gout (patient aged 42), in which insomnia had lasted for two or three weeks. Urethan (20 grains) the first night gave, after an hour, three hours' restful sleep in the night; a similar dose the second night caused in a few minutes a quiet sleep for four or five hours; and the third night, after an hour, an interrupted sleep for three or four hours. No bad after-effects. 1 drachm of paraldehyde produced in half an hour a quiet, restful sleep of three hours. Sulphonal (30 grains), on two separate nights, produced no sleep, but caused vomiting within half an hour (J. Hervey Jones, M.D.).

Alcoholism: Mania.—In a patient, aged 40, with alcoholism, cirrhosis of liver, and gastric catarrh, insomnia had been bad one week. Urethan (20 grains) produced, in one hour, sleep, which lasted one hour, and continued for three hours irregularly during the night. Sulphonal (10 grains) produced, in half an hour, four or five hours' quiet sleep, without bad after-effects, and was repeated on several occasions, always with good results (Dr. J. H. Jones).

In a case of acute alcoholism (patient aged 40), insomnia had lasted seven days; chloral hydrate (30 grains) and ammonium bromide (30 grains) every four hours produced no sleep, but vomiting after the later doses. Sulphonal (60 grains) produced in three hours seven hours' quiet, refreshing sleep, with drowsiness, but no other bad after-effects. The drug was continued for seven days, and always with good results (Dr. J. Gordon).

In acute and chronic mania and melancholia Dr. John Molony reports that in cases of irregular insomnia, lasting from three nights to a week, bromides, bromidia, urethan, liq. opii sedat., etc., in full doses, produced unreliable effects, but sulphonal, 20 to 30 grains in single doses at bedtime, or 15 grains three times daily, produced, in an hour, two hours and a half or three hours' quiet, refreshing

sleep for four to eight hours; no bad effects were observed.

SUMMARY OF RESULTS.

The results are best summarized under the following headings: 1. Dose or drug given? 2. Whether sleep is produced with certainty, how soon it comes on, and how long it continues? 3. Are there any dangerous or other disagreeable effects produced? 4. Whether the drug loses its effect?

SULPHONAL.

1. *Dose.*—In thirty-two of the cases recorded, 20 grains were given in eleven instances, once at night. Sleep came on in half an hour to three hours; in one case in five hours, and in another in nine hours. A second dose on the succeeding night in one case produced sleep in five minutes. Sleep lasted in four cases all night; in four cases six hours; and in three cases one to two hours. With 25 grains (four cases), sleep came on in two hours, and lasted six hours or all night. With 10 and 15 grains there was less sleep produced, and in a case of pneumonia (15 grains) there was no sleep after the drug. The few cases (seven in all) in which 30, 40, and 60 grains were given, showed that these doses did not possess greater hypnotic effect than a dose of 20 grains. In a case of chronic gout, 30 grains had no effect.

Disagreeable After-Effects.—In six out of ten cases, in which 20 grains had been given, disagreeable after-effects were noted; drowsiness next day was noted six times, giddiness four times, and headache and inco-ordination of gait each twice. In four cases, where 10 grains had been given, drowsiness was noted once; in five cases, with 15 grains, drowsiness was noted twice and giddiness twice; with 25 grains (four cases), drowsiness was noted twice, giddiness once, and headache once. In seven cases, with 30 to 60 grains, drowsiness was noted four times, giddiness twice, headache twice, inco-ordination of gait and vomiting each once.

Whether the Drug loses its Effect?—Several of the cases show that a second dose on the succeeding night has a greater effect than on the first night. Thus, in one case, 20 grains produced, on the first night, two hours' sleep with no bad after-effects; on the second, a similar dose produced eight hours' sleep, with drowsiness, giddiness, and inco-ordination of gait on the following day. In some cases prolonged use of the drug appears to diminish its effect. Thus, in one ca (asthma and bronchitis), 20 grains was give every other night for eight weeks. Duri the first fortnight sleep came on in an ho and lasted twelve hours each night. Th drug was then omitted for a week, when th insomnia returned. In the succeeding fi weeks the drug, after three hours, produc six hours' sleep. In a case of phthisis, grains was given every other night for twent six days, except for five days, when the do was reduced to 10 grains, but afterwards w increased. During the time the patient w taking 20 grains, after an hour, he slept f four to six hours. The drug was omitted f a fortnight, and, on recommencing it, it pr duced only drowsiness, and no sleep. In th case of neurasthenia and insomnia, quote by Mr. Priestley (see *antea*), sulphonal, 10 20 grains, did not lose its effect during s months.

PARALDEHYDE.

Single doses of 40 to 60 minims (fourte cases) produced sleep in five to fifteen mi utes; in two cases in half an hour; in o case in an hour. In most cases the sleep w wakeful and restless, and lasted very varyi times, in one case only three-quarters of hour, in another case there was restless dozi for three hours, in another sleep for two hour in ten cases sleep lasted from three to s hours, and in one case sleep for twelve hour These results refer to single doses. ½ drach every three hours produced within half hour two hours' sleep; 20 minims every fo hours for fourteen days produced better sle at night, but not during the day.

Disagreeable After-Effects.—Giddiness a drowsiness were noted each once, vomiti three times, and retching and nausea ea once.

Tolerance of the Drug.—In a case of mitr stenosis on two nights 40 minims gave two five hours' sleep; on the third night a simil dose had no effect; on the fourth night drachm was satisfactory, but on the six night it produced no effect. When the para dehyde failed it seemed to produce slig excitement. Morphine succeeded well afte wards.

CHLORALAMIDE.

In one case 20 grains, and in six cases grains, were given in single doses. After th 20 grains, sleep came on in twenty minut and lasted three hours, with half an hour interval of waking; after 30 grains, slee came on in fifteen minutes to half an hour i four cases; in one to two hours in two case

Sleep lasted all night in three cases, in two cases four to five hours, and in one case there was two hours' dozing, then an interval of wakefulness, and then two hours' sleep.

Disagreeable After-Effects.—None observed.

Tolerance of the Drug.—Thirteen consecutive observations were made in a case of pernicious anæmia, with several weeks' insomnia. 30 grains of chloralamide failed once on the ninth night; on the other nights the drug produced, in one to two hours, restless sleep, lasting all night, with two or three short intervals of wakefulness.

TRACHEAL INJECTIONS AS A MODE OF MEDICATION.

At the meeting of the Academie des Sciences, held July 21, 1890, DR. BOTEY, after alluding to the rapidity of absorption, determined by Colin, of liquids injected into the bronchial tubes, reported a number of experiments which he himself had made in this connection (*La France Médicale*, August 1, 1890).

He stated that he was warranted in attempting such experiments on man by the fact, long ago observed by Bichat, of a nutritive injection, which it was desired to introduce into the stomach by an œsophageal tube, but which was accidentally injected into the lungs, and which, without producing any accident, was rapidly absorbed.

Bouchard, likewise, has performed a number of similar injections on the rabbit, and stated that they were perfectly harmless, and that absorption was rapidly produced.

Dr. Botey performed a number of experiments, in the first place, on rabbits, and found that scarcely any disturbance of respiration or serious trouble was produced until the tracheal injection exceeded fifty drops; though even then, when the animals were killed, post-mortem examination failed to reveal any alteration of the respiratory tract. In one case, however, death rapidly followed the injection in a small rabbit of a little over a drachm of water into the trachea, the symptoms being accompanied by œdema and congestion of the lungs, with an effusion of bloody froth into the bronchi. A number of astringent injections were then performed on rabbits (one-half per cent. of nitrate of silver, one-half per cent. of bichromate of potassium) without any serious accident being produced.

The author then passed to experiments made on himself, since he possessed the power of observing his own larynx. He first produced a certain amount of anæsthesia by a solution of cocaine, and then, by means of a laryngeal mirror, introduced a syringe provided with a long, appropriately curved canula, and injected 160 minims of distilled water into the trachea. Not the slightest discomfort was felt, nor was the least cough produced, and after repeating this experiment for a number of successive days, he found only that the respirations were reduced to 17 instead of 21, and that the pulse was reduced to 74 instead of 82. Three or four days later he employed a still larger quantity of water, until he found that he could administer more than two syringefuls into his trachea without producing any cough, though again he found that the number of respirations steadily decreased and the pulse-rate was lowered for several hours. Passing then to his clinical experiments, he alludes to the case of a woman suffering from syphilis of the larynx and trachea, in whom he injected about 3 drachms of an iodated solution without producing any cough, even although the larynx had not been anæsthetized. So also corrosive sublimate was employed, as well as the iodide of potassium, the injections being administered ten times successively, the patient supporting this mode of treatment extremely well, and was cured of her affection, although previous internal treatment of the most energetic character had been without avail. Here also he noticed that the number of respirations were reduced from 24 to 18 for a number of hours after the employment of tracheal injections.

A PROCEDURE FOR WASHING OUT THE MALE BLADDER WITHOUT THE USE OF A CATHETER.

DR. ROTTER describes, in the *Centralblatt für die Gesammte Therapie*, July, 1890, a method for washing out the male urinary bladder without the use of the catheter, by which the introduction of infectious germs into the bladder by the catheter is thus avoided. The author employs a rubber tube attached to an irrigator filled with lukewarm antiseptic fluid, on the end of which is a mouth-piece, wrapped with antiseptic gauze and covered with vaseline, to render its insertion into the orifice of the urethra more readily performed. The tube is filled with liquid, and air allowed to escape, and then inserted for about half an inch within the urethra. Immediately before the operation the patient

must first empty the bladder, and is then placed upon his back, with the legs separated and flexed upon the pelvis, the hips being somewhat raised; the end of the tube is inserted into the urethra, and held fast with the fingers, and the fluid allowed to enter. Within one or two minutes, it is stated, the sphincter of the bladder relaxes, and, after three minutes, the liquid enters the bladder.

The pressure may be regulated by the height to which the irrigator reservoir is elevated. After the removal of the tube, the patient may readily empty his bladder of the fluid introduced, which may amount to a pint or more.

THE SURGICAL TREATMENT OF TUBERCULOSIS OF THE PLEURA AND LUNG.

At the Congress of German surgeons held this year at Berlin, PROFESSOR TILLMANNS showed a patient whom about two years previously he had completely cured of severe tuberculosis of the left pleura and left lung by extensive resection of the front part of the left chest-wall. The tuberculosis of the left pleura and left lung was made accessible for purposes of local surgical treatment by removal of the fore part of the left chest-wall, which was also affected with tubercular disease. The heart was displaced to the right behind the sternum as the result of an empyema of more than two years' standing. After the cure of the tuberculosis of the left pleura and the left lung, Dr. Tillmanns converted the left pleura into a cutaneous cavity by transplantation of skin according to Thiersch's method. The healthy right lung and the heart, which still remains displaced to the right, now act so well that the patient, in spite of the loss of his left lung, has since about September, 1888, been able to attend to his business as a merchant quite in the same manner as before. The author's observation is of interest with reference to the operative treatment of tumors and other diseases of the pleura and lung, and in the *British Medical Journal* for June 14, 1890, he reports the case referred to above, adding some remarks on the surgical treatment of diseases of the lung and pleura.

In the first place, with regard to the history of the above-mentioned case, the following are the chief points: The patient, who is now 28 years of age, came under care on April 19, 1888. He presented the appearance of one in the last stage of phthisis. The left lung was phthisical to a high degree, the pleura being firmly adherent in its upper third; in the sputum numerous tubercle-bacilli were found. In the two lower thirds of the left pleural cavity there was an empyema, which had been in existence for two years and a half; several fistulæ traversed the left front chest-wall, which was also the seat of tubercular disease. As a result of the left-sided empyema, the heart was dislocated to the right behind the sternum. The right lung was comparatively healthy and acted well. In the middle of October, 1885, the patient became affected with serious left-sided empyema, and after that time (that is to say, for more than two years and a half) he was, with few exceptions, confined to his bed.

In November, 1885, about three litres of pus were removed by means of puncture (thoracocentesis). In September, 1886, and January, 1888, thoracotomy, with resection of a piece of rib at the lower and hinder part of the thorax, was performed by a practitioner in Saxony. When the patient came under Dr. Tillmanns's care in April, 1888, he first sought to cure the existing left-sided empyema by means of extensive rib resections,—from the second to the sixth rib on the left side in front, and of the seventh, eighth, and ninth ribs on the left side behind,—of course with slight hope of success, since the left lung was already the seat of serious tubercular disease. As the patient was becoming steadily weaker, and had no prospect but that of a speedy certain death before him, he determined to expose the tuberculosis of the left pleura and left lung by extensive resection of the anterior part of the tubercular left chest-wall,—ribs as well as soft parts,—and subject it to energetic local treatment. In this manner the left lung would certainly be placed completely, and probably forever, *hors de combat*, and the patient would have to be contented with the work of his right lung alone. But the left lung was extensively diseased, and had been functionally incapable for months, and the patient had, in fact, been for months entirely dependent on his healthy right lung. By too long waiting the right pleura and right lung would also become tuberculous. On May 27, 1888, therefore, the front part of the left chest-wall, tuberculous and riddled with fistulæ as described, was resected *in toto* for an extent of from five to twelve centimetres, from the second to the sixth rib, close to the left sternal border. The breadth of the portion of the thoracic wall re

moved was five centimetres at the upper part; it became wider from above downward, and measured twelve centimetres in breadth at the lower part. The whole of the left pleura was tubercular to a high degree; the left lung was phthisical, and only as large as a man's fist, and was firmly adherent at the level of the first rib. The left lung was partly covered by a pedunculated skin-flap taken from the thorax, in such a manner, however, that it remained accessible to local treatment. The left pleura was energetically scraped with a sharp spoon, and then stuffed with iodoform gauze. On June 22 the left pleura, after repeated previous scraping with the sharp spoon, was converted into a cutaneous cavity by transplantation of skin according to Thiersch's method. Local treatment of the left lung proved unnecessary in the further course of the case. The organ shrank together steadily more and more, and the tuberculosis, of which it was the seat, underwent a process of spontaneous cure in consequence of this shrinking. The patient was discharged cured on July 23, 1888. He has remained quite well up to the present time. He can attend to his business as a merchant as before his illness, and presents a blooming appearance. When Professor Tillmanns saw him again for the first time some time ago he did not recognize him at the first glance, so stout had he become. The left lung, entirely collapsed, could be felt in the upper part of the left side of the thorax, at the level of the first rib behind the flap of skin which partly covers it; it is quite inactive. The right lung is absolutely healthy; the heart is still displaced to the right. The left pleura is a skin cavity of the size of a man's fist, and covered with epidermis. In speaking and on deep inspiration the mediastinum is arched to the left. At the lower part of the mediastinum—that is, the median wall of the skin cavity—the movement of the heart can be seen and felt. The strength and movements of the left arm are not impaired, but perfectly normal.

The author recommends that in similar severe cases of one-sided tuberculosis of the pleura and lung, the same procedure should be adopted as carried out in the case related,—that is to say, the seat of disease should be exposed sufficiently for local surgical treatment by free resection of the chest-wall in front or behind. In suitable cases the performance of a temporary resection of the chest-wall may be recommended. A pedunculated flap of skin and bone is formed, and turned back, and afterwards, when the disease of the pleura and lung is cured, the thoracic coverings are placed in their original position. One can also proceed in such a manner that, after extensive resection of the ribs, the soft parts in the chest are divided in the direction of the lung, the two flaps of soft tissues drawn apart with wound hooks the pleura and lung subjected to adequate local treatment, and then the soft tissue flaps united to the pleura by compression. In the above related case Dr. Tillmanns was obliged to remove the anterior part of the left chest-wall *in toto*, as it also was extensively diseased.

The case teaches further the manner in which unilateral tumors of the pleura and lung may best be removed. In these cases, likewise, the pleura and lung should be exposed by total or temporary resection of the chest-wall, or by resection of ribs, with division of the soft parts of the thorax in the direction of the lung; and then, later on, by a second operation, the diseased lung, which is by this time collapsed, should be removed, and the tumor extirpated or destroyed with Paquelin's thermo-cautery.

Recently the author states that he has also treated pulmonary phthisis by injections of iodoform glycerin and iodoform oil. He uses ten per cent. sterilized mixtures of iodoform glycerin or iodoform oil, which he injects into the lungs to the amount of five grammes, with antiseptic precautions, through an incision in one of the intercostal spaces. He has not found it advantageous to inject more than five grammes. At first he made the injections under chloroform narcosis; now he makes them without an anæsthetic. Beyond ordinary dyspnœa, which quickly passes away, he has seen no injurious effects. He always makes the injection into one lung only, never into both at the same time, and usually performs the injections at intervals of from one to two weeks; in slighter cases he makes them every three or four weeks. With regard to the real advantages of these injections of iodoform into the lung, he cannot as yet make any positive statement. What he has seen up to the present, however, encourages him at all events to continue the treatment of pulmonary tuberculosis by injections of iodoform.

ECZEMA FROM THE USE OF CREOLIN.

Quite a number of cases have recently been reported in which more or less unfavorable results have followed the employ-

ment of creolin, in the majority of cases the effects being attributable to the phenic acid and its derivatives in this proprietary remedy. In the *Gazette Médicale de Paris*, No. 29, 1890, a report is published of a case observed by M. BOREHMEYER of a child, 2½ years of age, whose finger was crushed between cog-wheels, by which a severely contused wound was produced, which was treated by applications of a one and a half per cent. solution of creolin. On the fourth day the finger was covered with vesicles, both small and large, which ruptured spontaneously, giving issue to a yellowish liquid. The eruption soon disappeared from the injured hand, and, on the removal of the application, a cure was rapidly produced, though the eruption again returned on renewed application of creolin. So also Dr. Wackez publishes an account of seventeen different surgical cases treated by creolin. In ten of these, union by first intention occurred; in seven the creolin produced eczema, erythema, and vesicular eruptions, and desquamation of the skin in large patches; at the same time the patients had more or less severe constitutional disturbance, and an examination of urine showed that these poisonous effects were attributable to the presence of phenol. It would seem, however, that children are especially susceptible to the deleterious effects of phenol and its derivatives, and hence are more readily influenced by creolin.

CREOSOTE IN PHTHISIS.

From a careful study of the literature and his own personal experience as to the dosage and mode of administration of creosote in phthisis, DR. WM. H. FLINT draws the following conclusions (*New York Medical Journal*, July 26, 1890):

1. That intrapulmonary and intratracheal injections of creosote are of doubtful utility, and may be positively injurious.

2. That, for administration by mouth or rectum, solutions and emulsions of creosote are preferable in most cases to capsules, pills, or wafers.

3. That milk is an excellent vehicle for the administration of creosote in solution or in emulsion.

4. That each method of administering creosote used by the writer—viz., by inhalation, by mouth or rectum alone, and by both these channels simultaneously—is useful, and may each be particularly adapted to individual cases. In suitable cases the most rapid progress seems to be made when all these ports of entry are utilized.

5. That the best results for each individual attend the administration of the maximum quantity of creosote which this patient will bear.

6. That the average patient will not easily tolerate more than ten or fifteen minims of creosote per diem for any great length of time, and that many will only bear two or three drops per diem continuously administered.

7. That it is very important that the treatment be uniform and uninterrupted.

8. That, consequently, an effort should always be made, if intolerance of creosote is shown by any one mucous surface, to employ some other channel of introduction, in order that the continuity of the treatment be not interrupted.

IODOSULPHATE OF CINCHONINE.

When iodide of potassium is added to a watery solution of a salt of an alkaloid, a voluminous precipitate is formed, which consists of a combination of the iodine and the alkaloid.

Bouchardat, who discovered and studied these combinations in 1845, designated them under the name of the iodides of the iodohydrates of the alkaloids, but it is now known from the investigations of Herapath that these combinations contain sulphuric acid and they are now designated under the name of iodosulphates.

All of these combinations, no matter what may be the alkaloid employed, contain a large proportion of iodine, and in *La Progrès Médicale* for July 12, 1890, M. YVON publishes a paper on some studies made with the iodosulphate of cinchonine, which he terms "antiseptol," and recommends as a substitute for iodoform on account of its low price. From a chemical point of view, the iodosulphate of cinchonine was studied in 1826 by Jorgensen of Copenhagen. He described three combinations of iodine with the sulphate of cinchonine. These combinations are perfectly definite and crystalline.

For therapeutic use the preparation of the iodosulphate of cinchonine is extremely simple. The sulphate of cinchonine is dissolved in water, 25 parts to 2000, and then precipitated by the solution of iodated iodide of potassium, or Bouchardat's reagent, which consists of 10 parts of iodine, 10 parts of iodide of potassium, dissolved in 1000 parts of water. In the addition of these reagents, excess should

be carefully avoided, and the solution should be allowed to retain a little sulphate of cinchonine. The voluminous precipitate formed by its addition may be collected on a filter, and washed until the washings no longer contain free iodine. In drying in the air the iodosulphate of cinchonine is obtained as a definite product, containing fifty per cent. of iodine, and may be obtained in a crystalline form.

The amorphous form, as obtained above, is, however, perfectly applicable for therapeutic employment. It occurs in the form of an impalpable powder, without odor, without color, insoluble in water, but soluble in alcohol and chloroform. It may be employed, according to Yvon, in all conditions where iodoform is indicated, and he states that, in the trials which he has made of this substance, it seems quite as efficacious as iodoform, and may be readily prepared by any pharmacist.

ANTISEPTIC CURETTING OF THE UTERUS IN PUERPERAL ENDOMETRITIS.

Dr. E. Braun (*Arch. f. Gyn.*, B. xxxvii., H. 3) reviews some of the prevailing opinions with reference to the bacteriology of puerperal fever. He believes with Kehrer that three groups of germs are concerned in the etiology of child-bed fever,—viz., pyogenic, septogenic, and saprogenic micro-organisms. In other words, he holds that puerperal fever may be pyæmic, septic, or sapræmic. The latter or putrid form he thinks the most common.

Charpentier regards septic endometritis as the principal initial form of child-bed fever. After curetting and douching the uterine cavity he mops it with creosote and glycerin.

Of seven thousand six hundred puerperal cases at Vienna, one hundred and one were curetted, ninety-six recovered. Of the five fatal cases, three were considered septic rather than sapræmic.

The Vienna method is as follows: The patient is placed in the Sim's position, the external genitals cleansed, and the vagina and uterus irrigated with a thymol solution before and after curetting. A finger-thick iodoform-pencil is dipped in tincture of iodine and left in the uterus. Vaginal tears and abrasions are touched with tincture of iodine. The cervix and vagina are lightly tamponed with iodoform gauze. The patient is given a dose of cognac, and an ice-bladder is applied over the abdomen. A vaginal douche of thymol solution is used once daily. The fever subsides in from one to six days. Parametric inflammation had not been observed as a result of the curetting.

Curetting is indicated when a septic condition of the endometrium is announced by fever, faulty involution, and fetid lochia. It is useless after the infection has become general.—*Brooklyn Medical Journal*, August, 1890.

PARAGUAY TEA.

Paraguay tea, also called maté or Yerba maté, from the name of the cup in which it is infused, consists of the dried leaves of the Brazilian holly (*Ilex paraguensis*). This plant is most extensively used in South America, and is said to possess many of the good qualities of tea, though a long indulgence in its use has been stated to induce diseases similar to those following the abuse of alcoholic drinks. In South America the tea is first placed in a maté, in which it is well shaken, a little warm water is then added, and the leaves stirred up; the gourd is then filled up with boiling water, and in a short time the liquid is ready for drinking, being stirred from time to time, and more hot water added as necessary; on account of the slowness with which exhaustion occurs, care is taken to prevent the loss of the aroma by never letting the infusion cool down.

In the *British Medical Journal* for July 26, 1890, Dr. T. Cranstoun Charles writes that he has lately made several chemical examinations of this body, as he finds that the analyses published of it varied very greatly. The alkaloid present is caffeine, identical with the caffeine found in tea and coffee; there is also a tannic acid present in large amount. Comparing the analysis of maté with tea and roasted coffee, the following results were obtained:

	Caffeine. Percentage.	Tannic acid. Percentage.	Ash. Percentage.
Tea.....	3.1	22.7	5.8
Roasted coffee	1.2	5.8	4.6
Maté.....	0.79	21.9	4.1

Both the active principles of these bodies appear to be the same, yet they seem to act somewhat differently on the system, and it should be remembered that their action is not dependent alone upon their proportion of alkaloid, but also on the presence of other bodies in small amount, such as volatile aromatic oils, empyreumatic products, and the like.

Dr. Charles made a number of experiments upon himself and a friend with the alkaloid, which he separated from the maté, and he found by the stethograph that, with doses of 1 to 3 grains,—

1. The respiration was first hastened and then made slower, while an exhilarating effect was likewise produced.

2. Slightly increased vascular tension as indicated by the sphygmograph showed itself soon, but a variable time, after the ingestion of the drug; it lasted a considerable time, varying, however, according to the dose, and when the blood-pressure sank apparently to normal or below it, it was followed later by another slight rise.

3. With small doses (½ grain) the contractions of the heart, as indicated by a Marey's tambour at the apex, and a continuous sphygmographic tracing, became slower and stronger. But with a dose of 4 grains the action became more frequent and irregular.

4. The urine passed for the two hours after taking 3-grain doses of the alkaloid, as compared with that passed in the two hours previously, showed a very slight increase in the urea and phosphoric acid eliminated, but a further more marked increase occurred some time later. The same conditions, as far as possible, were observed as on the two preceding days, when the same experiments were made at the same time without any alkaloid. Both the quantity of the urine and the total solids were slightly increased.

5. A strong solution applied to living excised muscle of the ordinary grass frog (*Rana temporaria*) produced a state of rigidity very closely resembling that induced by heat, no increased irritability showing itself however.

When strong solutions of the maté tea were taken, it was noticed that,—

1. The respiration seemed to be slightly accelerated, but continued easy and tranquil. An estimate of the carbonic-acid gas expired was made by comparing the increase in weight of a caustic potash apparatus after an hour's expiration through it,—the nose being clipped,—with the increase occurring under the same conditions as far as possible as to food, time, and surrounding temperature, but, after the ingestion of the maté, there was an undoubted diminution noted in the carbonic acid gas expired.

2. The blood-pressure was at first slightly raised, with slowing of the pulse; it then fell slightly, and the pulsation increased from 75 to 83 per minute.

3. The heart's action was rendered slower for some time and then accelerated, but was readily slowed again by the passage of an electric current along the line of the vagus in the neck.

4. The urine was apparently increased in quantity and was passed with greater frequency. The urea was determined every hour for four hours. Its elimination, as well as that of the phosphoric acid, was diminished, but ultimately slightly increased, the increase, however, being less marked with the phosphoric acid.

Both maté and its alkaloid were given for some time to three young men who undertook long walks and very long cycling rides. The experiments made upon them under similar conditions were of a most varied kind, but the general results appeared to be that the tissue waste was to a large extent retarded; that with little or no previous preparation long journeys and most arduous tasks could be undertaken without any apparent after-evil consequences; that the restorative effects in states of mental and physical exhaustion were well marked; and that these sustaining and recuperative properties were retained. Further, that the chief results obtained were constant and rarely variable, and that the digestion itself was stimulated, new life and sustaining power being imparted to the system.

But even from comparatively limited experience maté and its alkaloid seem to act somewhat differently in different individuals, in some the muscular, in others the nervous, and in others again the digestive system being chiefly affected.

Maté accordingly appears to act as a cerebral stimulant, and also to have a special action on the sympathetic system, the contractions of the cardiac muscle being increased as well as those of the unstriped muscle of the bladder and intestine; and the whole muscular system seems to be stimulated by it to increased labor and wakefulness.

As regards the therapeutics of maté, but little has yet been determined, although Dr. Charles states that in the instance of two old ladies who were great tea-drinkers, and who used to suffer much from sleeplessness, headache, and constipation, the use of maté had after a week produced great improvement. They slept well, passed more urine, their bowels became regular, and they suffered no more from headaches. It is also stated by Dr. Charles to have been serviceable

in relieving patients who suffered from severe nervous headaches generally associated with constipation, and with whom tea and coffee appeared to disagree.

TREATMENT OF DIPHTHERIA BY INOCULATION WITH THE MICROBES OF ERYSIPELAS.

In the *Répertoire de Pharmacie* for July 10, 1890, it is stated that DR. BABCHINSKI was attending a case of grave diphtheria occurring in his own son, in which a rapid change for the better occurred coincidentally with the appearance of erysipelas on the face. The fever rapidly fell, the false membrane disappeared, and cure rapidly took place. Dr. Babchinski also states that in several other cases he noted a great improvement coincident with the appearance of erysipelas, and in one of them the erysipelas occurred on the leg and not on the face. These facts suggested to Dr. Babchinski the idea of inoculating diphtheria cases with blood taken from patients suffering from erysipelas, and he states that in several cases in which he employed this procedure cure resulted. Later on he practised inoculation of other cases of diphtheria with cultures of the microbe of erysipelas in agar-agar, and likewise noticed the disappearance of the symptoms of diphtheria. He further adds that when the inoculations were made all special treatment was suspended, and in no case did the erysipelas present any sufficient gravity to cause uneasiness. He concludes by stating that, if his observations and experiences are confirmed, this treatment should rob diphtheria of all its dangers.

Reviews.

A TREATISE ON ORTHOPÆDIC SURGERY. By Edward H. Bradford, M.D., and Robert W. Lovett, M.D. New York: Wm. Wood & Co., 1890.

This work, as stated by the authors, is not confined to the consideration of orthopædic surgery alone, but is much more comprehensive, including those causes or affections which may possibly result in some deformity, and are the primary exciting diseases which later come strictly under the head of orthopædics. It is, therefore, evident we have here a work in which the scope is far more extensive than in other works on this subject. From such an extensive view of the term orthopædics, it is very manifest that many affections must be included that would not properly come under this heading, and to the general practitioner of surgery such a view must be very acceptable, since in his practice he has often found that the only way of practically treating many deformities is their early recognition, long before the deformity is apparent, therefore this combination of our authors is a most judicious one, and one, we think, that will prove of great assistance in the study of orthopædic surgery.

The consideration of Pott's disease, which includes the first chapter, is a very full and very satisfactory study of this affection. The etiology is said to be a tuberculous osteitis, and the exciting cause often some form of traumatism. Upon this question of etiology we would have liked the authors to have been somewhat more positive in their opinion; while they evidently are inclined to the tubercular view, and in places write to this effect, they again give the impression of doubting its absolute truth, stating "that the disease is of a tuberculous nature is frequently asserted and seems probable." The section on the symptoms we have found to be most comprehensive, and shows a careful study of the affection. The one constant and important indication of the presence of Pott's disease has been found by the authors to be muscular rigidity, other signs may be noticed, but their presence or absence are not positive indications, and they are only of relative importance, while muscular rigidity is said to accompany all cases of the disease. The symptom of tenderness on pressure over the spine, which is by most writers thought to be always present, and, indeed, has been generally looked upon as certain indication of this affection, the authors write, "is almost never present." Upon this point we believe the experience of many surgeons will not accord with their opinion. We, at least, have generally sought for and frequently found this symptom.

The treatment in cases of "Pott's disease" is truly said to be simple, but its practical application is found to be most difficult. The indications are to remove pressure and prevent motion; upon the carrying out of these principles will depend the success of the treatment, and it is to this end that all appliances and methods lead. The experience of the authors, and in which we fully agree, is that the choice, practically, of accomplishing fixation and obtaining suspension is by one of two methods,—viz., the plaster jacket and

its modifications, or the posterior steel brace, and of these two, that of the antero-posterior support is given the preference. They write: "Having had a somewhat extended experience in the treatment of Pott's disease by both the plaster jacket and the antero-posterior support, the writers are desirous of expressing their preference for the latter in all cases where it is obtainable, except in those cases of low dorsal caries and in cases with a serious lateral deviation of the column, as previously explained. In saying this they do not intend in any way to throw discredit upon the plaster-jacket treatment, which is a very efficient one, and only suffers by comparison with a more efficient method, which is to be found in the antero-posterior support." To the above conclusion we also fully acquiesce, stating, however, that no one method is applicable to all cases. Each case requires a special study, and that treatment adopted which will best fulfil all the indications to obtain a satisfactory result. In regard to the direct surgical interference in cases of Pott's disease, which operations are of recent date, the authors write: "That resection of the laminæ of the vertebral column is an operation which is attended with some risk of a fatal result. . . . The operation, however, has no place in the treatment of Pott's disease until the conservative measures have been faithfully tried over a sufficient period of time, measures which, in most cases, will prove efficient and successful in the relief of the paralysis."

Lateral curvatures of the spine are quite fully considered in all their aspects, and a very interesting series of experiments are given in order to demonstrate that superincumbent weight could cause the change, which chiefly consists of a twist of the spinal column, "with such alterations of the different vertebræ as would follow such a twist, provided the bony structures were unable to sustain such a downward pressure." The choice of methods of treatment in these affections are summarized as follows: 1, postural; 2, gymnastic; 3, by recumbency; 4, methodical correction; 5, mechanical; the selection of the method of treatment depending upon the patient's condition and state of the curvature.

The chapter on "The Pathology of Chronic Joint-Disease" is well written, and comprehends the most recent views pertaining to this subject. Degenerative osteitis of the ends of the bones, especially in children, is, we believe, correctly considered to be a tubercular affection. Scrofulous joint-disease, tuberculosis of joints, chronic articular osteitis, and the term "caries" of the joints are all classed as tuberculous osteitis. The original infection, by means of the tubercle-bacillus, is believed to be through the blood-vessels, although the lymph channels may sometimes probably be to blame. As to the etiological factor of the tubercle-bacillus, the authors' conclusions are "that in most cases of chronic joint-diseases of the character just described, tubercle-bacilli are present, but that the examination for them is difficult; and, moreover, that they are present in small numbers at the late stage, when most examinations are made; probably in the stage of invasion examination of the tissues would show many more." The question as to the identity of tuberculosis and scrofula, notwithstanding its very great interest, the authors refrain from giving us their opinion and those of Mr. Marsh, and refer to Mr. Treves for a discussion of the relation of scrofula and tuberculosis.

Hip-disease receives the extended and full consideration necessary for the perfect understanding of this frequent affection. The pathological condition most commonly found is stated to be a chronic osteitis of the epiphysis of the head of the femur, and the point of original disease is thought to be of osseous origin in children, while in adults an initial synovitis is believed to be more common. The symptom of lameness, or a limp in walking, is considered by the authors of more diagnostic value, in the very early stage of the affection, than pain; indeed, pain is looked upon as a very unreliable indication of the condition. Thus, it is said: "*Pain may be absent at any or all stages of the disease, and is not a diagnostic sign for or against the presence of hip-disease.*" An exception, however, is made in regard to "night cries" or pain, which are to be met with at an early stage of the affection. Muscular fixation is a symptom considered to be of great diagnostic value, and the methods of demonstrating its presence are well described. The treatment of abscesses, in connection with hip-disease, advised by the authors, is that which we have always found, in our own practice, to be most satisfactory,—viz., incision and drainage, with complete antiseptic measures. Aspiration we have found only to lengthen the time of treatment and to be of very doubtful utility. In making the comparison between excision and non-operative methods of treatment of hip-disease, the conclusion reached by the authors

s quite in accord with the experience of our wn practice,—that is to say, the careful carying out of conservative methods and strict ttention to details give better results in the ajority of cases. Again, excision is only to e resorted to in exceptional cases. It may e classed as a life-saving procedure, and its doption is only justifiable in those cases hich are unusually severe, and where conervative methods cannot be employed satisactorily. The principles of treatment given y the authors may be briefly stated to be ixation with recumbency; yet each case is o be studied separately, and not the employent of any one splint or method, but such eans as meet the indications as they are resented.

In the treatment of tuberculosis of the nee-joint, the same conservative methods re advised as in hip-disease. "Excision is ot an advisable method of treatment until echanical measures have proved inefficient fter a faithful trial, and the same is true of rthrectomy." Many surgeons will not acept this opinion, and believe that a more apid and satisfactory result may be obtained y early operative interference.

The deformity "club-foot" is stated to be sually a congenital one, but occasionally is et with as a result of infantile paralysis and fter accidents. The etiology of the conenital variety is thought not yet to be defiitely determined. The various theories are iven, and the conclusion reached is, "that e are entirely ignorant of the causation of lub-foot, and unable to give a reasonable atisfactory explanation of the phenomena of s development." In regard to the treatent of club-foot, the authors believe that few procedures in surgery are as precise in heir indications and as certain in their reults as the methods for the correcting of lub-foot." The indications are very manifest,—viz., correction of the distortion and etention of the foot in a corrected position. o obtain these results the experience of the uthors has led them to adopt the following onclusions:

"1. That the cases of infantile club-foot an, as a rule, be thoroughly and efficiently reated without tenotomy by mechanical corection and mechanical retention alone. enotomy, however, is an aid, even in infantile cases.

"2. That in older cases tenotomy aids the correction, and is not injurious in the permaent result.

"3. That, as a rule, resistant cases of the severest type can be corrected without tarsal osteotomy by forcible rectification.

"4. That in exceptional cases of resistant club-foot tarsal osteotomy may be needed for perfect rectification, and is not only justified, but may be indicated in exceptional cases."

The question as to immediate or gradual correction after the operation of tenotomy, in cases of club-foot, is, we think, very properly decided in favor of the former. The possibility of non-union of the tendon, being considered theoretical rather than practical, and by the immediate rectification and overcorrection of the club-foot, much time is saved, while the treatment of club-foot, in older patients, by the method of tarsal resection, is thought to be occasionally advisable, yet the operation is not recommended, owing to the mutilation of the foot necessary in its performance.

The constitutional disease rickets, due, it is thought, to malnutrition, is among the affections considered in the book, owing to the deformities which so frequently result, and which demand surgical treatment. The constitutional treatment of the affection is first preventive, and consists in proper feeding; yet it is correctly stated that no rule can be definitely laid down as to what food may or may not cause rickets. That which imperfectly nourishes the child is evidently an exciting cause of rickets, and should be discontinued. Drugs are by the authors believed to be of secondary importance to careful regulation of the diet and hygiene, yet they are not to be neglected. Phosphorus, which has been associated so strongly in the treatment of this disease, has not, in their experience, proved very satisfactory. The syrup of the iodide of iron they have found to yield better results, in conjunction with careful hygienic treatment, than any of the phosphorous preparations.

The resulting deformities of rickets,—knock-knee and bow-legs,—when occurring in early childhood, are thought to be almost always associated with general rickets. When these deformities occur later in life, the affection is not thought to depend upon the disease rickets, but may be due to a feeble physique, muscular paralysis, fractures, and destructive osteitis. The treatment of the deformity knock-knee is divided into expectant, mechanical, operative. In regard to the first, the authors consider it to be very limited in its scope, and only to be employed in the mildest cases in young children. The careful carrying out of hygienic measures and constitutional treatment must always be minutely observed when the ex-

pectant method is adopted. Mechanical treatment by apparatus aims at the gradual correction of the deformity, and in suitable cases very brilliant results have been obtained by the authors. Its great objection, however, is the time necessary to secure a cure, and also the difficulty of securing the co-operation of the parents. The operation of supra-condyloid osteotomy of Macewen is advised, and is believed to be superior to all other operations for the relief of this deformity.

The deformity bow-legs is a condition in which the angularity of the knees is opposite to that of knock-knee. Why this form occurs and not knock-knee has been the cause of much discussion, which our authors do not decide, but are inclined to believe with Mr. Lane that there is a rotation forward of the sacrum, which occasions a rotation backward of the pelvis, thus shortening the ilio-femoral ligaments, and necessitates flexion of the thighs in the erect position. As in knock-knee, the treatment is divided into, 1, expectant; 2, mechanical; 3, operative. They, however, believe that the expectant method is of much greater value in bow-legs than in knock-knee, and that a large percentage of cases under this treatment give favorable results. It is advised, "in the case of babies, the expectant plan of treatment is the one to be followed at first. . . . If, after two or three months, the deformity is found to be increasing or stationary, mechanical treatment must be begun." "Mechanical treatment is based upon the principle of drawing the knee inward to a rigid or elastic rod, which has counterpoints for sustaining outward pressure at the upper part of the thigh and the ankle." In regard to the form of apparatus used to accomplish this end, the authors state that the appliance which best fulfils its object is the one to be employed. The adoption of mechanical treatment after the bones have become thoroughly ossified is, of course, useless, and it now becomes necessary to resort to some form of operative treatment. The operative procedures are divided into osteoclasis, osteotomy, and osteostomy. The choice between these different operations is said to depend upon the nature of the case, and no rules can be laid down as suitable for all.

Congenital deformities, congenital dislocations, infantile spinal paralysis, cerebral paralysis of children, flat-foot, and functional affections of the spine and limbs, are, with the above-noticed subjects, included in the work, and altogether they make a volume of orthopædic surgery for reference, study, or practical application not excelled in the English language. The illustrations are numerous, and add much to the value of the book, but from an artistic point of view they are bad, very bad.

J. H. C. S.

Correspondence.

PARIS.

(From our Special Correspondent.)

Rome, the next Medical Congress Meeting-Place—Therapeutic Value of Strontium Salts—Prevention of Chloroform Accidents—Hypnal, *alias* Monochloral antipyrin—Salt not Incompatible with Calomel.

Although many "working" French practitioners have been away, attending the Berlin Congress, and a goodly share of attention was paid to the proceedings, Paris has not been without its usual quota of scientific news and discussions. It is not within the province of your correspondent to speak of Berlin, yet it may not be out of place to here mention that some misgivings are expressed at the selection of Rome for the next gathering. The choice recalls to one's mind the fate of another kindred Congress,—namely, that in charge of the projected International Pharmacopœia. Several triennial meetings were called, and punctually held in various European capitals, the last one being at Brussels in 1885. The project was progressing most favorably, and it looked as if one more Congress would complete the undertaking, when, in an evil hour, the members at Brussels accepted Italy's pressing invitation for 1888. Rome, said the Italian delegates, had no convenient meeting-hall, but Milan had. So Milan was selected. Well, in 1888 the local committee were not ready, and postponed action to 1889; in 1889, owing to the Paris Exposition, they postponed it again to September, 1890, without fail. And now they have confessed their utter inability, and the whole project has vanished into thin air. It is to be hoped history will not repeat itself in the case of the International Medical Congress.

While investigating the effects of various metals on the living organism, with a view to ascertain the truth about the relation supposed to exist between atomic weight and toxic properties, Dr. J. V. Laborde has made interesting observations, which he related at a recent meeting of the Paris Society of Biology. To begin with, it must be confessed that the atomic theory was found to work rather indifferently in therapeutics. But a more practical result has been a better knowledge of the physiological

properties of strontium salts, both by themselves and by comparison with the corresponding barium, potassium, and calcium combinations. The most important point elicited was the harmlessness of strontium, not only comparative, but also absolute. Gmelin, in 1824, already pointed out the fact. But while he chiefly experimented with the rabbit, a non-vomiting animal, Dr. Laborde operated on the guinea-pig, rabbit, dog, and on man. Not to enter into particulars, dogs weighing from thirty to forty-five pounds, after being repeatedly given from 2 to 3 grammes (30 to 45 grains) of strontium chloride in solution, showed no appreciable symptoms except a diuresis, which will be noticed again hereafter. As to the effects on man, the chemist, who supplied the products voluntarily, took in his food 2 grammes of strontium carbonate daily for six weeks, and never experienced any local or general effects attributable to the substance in question. The contrast with barium is a striking one. Although closely related, chemically, the two metals are, therapeutically, as dissimilar as possible, since barium salts have long been known to be violent poisons, even in small doses. Their physiological properties are too familiar to now need more than a passing allusion. More interesting is the comparison of strontium with potassium. While intramuscular or hypodermic injections of 25 centigrammes (4 grains) of strontium chloride in young guinea-pigs, or .50 to 1 gramme (8 to 16 grains) in rabbits, failed to have any effect, 8 centigrammes of potassium chloride, or sulphate, for guinea-pigs, and 40 centigrammes (7 grains) for rabbits, caused paralysis, first in the limb injected and subsequently in the whole hind quarters. Moreover, an injection of 160 centigrammes (25 grains) of potassic sulphate will suffice, in twenty-four hours, to kill a twelve-ounce guinea-pig, with symptoms of collapsus and asphyxia, and it should here be noticed that potassium chloride is more easily tolerated than either the iodide or nitrate of the same base. Now, to compare strontium with calcium, it was observed that while both proved almost equally harmless, the difference appeared to be rather in favor of strontium, intravenous injections of calcium chloride having caused vomitings, which never occurred with like doses of the strontium salt. And, lastly, strontium lactate was, somewhat unexpectedly, found to possess marked diuretic properties which may become useful in therapeutics. A dog, for instance, was observed to copiously urinate once a minute for nearly twenty-five minutes after being given, through the stomach-pump, 72 centigrammes (11 grains) of the metal, corresponding to about one grain per pound of body-weight. Of course further experiments will be needed before strontium lactate can be recommended in human medicine, but the remark is not without interest to therapeutists.

At the Academy of Medicine chloroform accidents and their prevention have been the subject of a long discussion, lasting over seven sittings. Although the chief debaters—Drs. Laborde, Verneuil, F. Franck, Le Fort, Guérin, and Labbé—are all men of acknowledged talent and experience, it cannot be said anything very new or striking was elicited respecting the mechanism and various causes of death under chloroform. But on one point—namely, to prevent reflex laryngeal accidents caused by the irritating vapor, as well as to avoid their effect on cardiac centres—Dr. Laborde has recommended a method which directly pertains to therapeutics. "Morphine," he remarked, "has been proposed to lessen peripheric sensibility, and some clinicians use it occasionally, but others object to it as tending to cause syncope. However it may be, I have tried to use in its place narceine, a substance presenting none of its disadvantages. Unfortunately, the principle isolated in 1868 by Rabuteau was very sparingly soluble, and consequently rather unmanageable. But recent experiments, undertaken in connection with M. Duquesnel, have enabled us to prepare a special soluble narceine possessing the same medical properties as the old one. Our researches being still incomplete, I cannot for the present describe the process of preparation, but here you can see a specimen of the substance, and a small vial of the liquid holding 1 gramme (16 grains) of it in perfect solution." A sealed letter respecting said preparation was at the same time by Dr. Laborde laid in the hands of the secretary for future reference. Continuing his communication, he said the narceine in question was tried with invariable success on animals to be chloroformed, quiet and easy sleep, unaccompanied with either vomitings, torpor, or other accidents being always obtained. Another method, almost as effective, is to paint with a solution of cocaine the larynx, inner throat, and pituitary membrane. The next point—that is, the lessening of the pneumogastric and cardiac centres excitability—might, in Dr. Laborde's opinion, be secured by means of either curare or atropine. The first is too unmanageable at present for human therapeutics, but the second has

been used with success by some practitioners, at Lyons especially. The chief objection against the alkaloid is that large doses, verging on the poisonous, have to be used. Indeed, it is a question whether the moderate quantities employed by the Lyons surgeons can have any effect on the pneumogastric. Before concluding, it must be said that, although Dr. Laborde's theories deserve consideration, they were not concurred in by all at the Academy, especially as regards atropine. It should also be remarked that considerable obscurity still surrounds the true nature of narceine, some chemists even asserting that the supposed alkaloid of that name, studied by Claude Bernard, has no existence in fact.

Hypnal, or monochloralantipyrin,* keeps attracting the attention of experimenters and therapeutists. Chloral and antipyrin will form two definite crystalline combinations, one containing 1 and the other 2 equivalents of chloral to 1 of antipyrin, and therefore named mono- and bichloralantipyrin respectively. After experimenting with animals, Dr. Schmidt (Nancy) has found that as a soporific one gramme of the mono-salt is equivalent to .55 gramme of chloral, and the bi-salt to .60 gramme. Both will lower the temperature, but the bichloral more so than the mono in equal doses. On respiration they act much like chloral hydrate, but on arterial pressure and cardiac contractions they have less effect than chloral. On being taken in the stomach, monochloralantipyrin is more poisonous than the quantity of chloral it contains, and the bichloral still more, but to a slight extent only. Taken altogether, the mono-salt was found to have over chloral the advantages of being more easily administered, affording more marked soporific effects, and, lastly, disturbing circulation to a lesser extent. As to bichloralantipyrin, there seems to be no object in substituting it for either chloral or hypnal. On the other hand, Dr. Gley (Paris) also, after animal experimenting, thinks there is no difference between the poisonous properties of the two compounds, and believes their physiological properties are exactly the same as those of plain chloral. And, finally, Dr. Fraenkel, from thirty-three observations, in hospital and city practice, has concluded that hypnal, being nearly tasteless and quite odorless, besides devoid of all irritating action on the mouth or stomach, is easier to administer than chloral, especially when treating children or delicate patients. As it possesses both hypnotic and analgesic properties, it is an unrivalled soporific, especially when sleeplessne proceeds from physical pain. Owing to i sparing solubility, hypnal is to be given eith suspended in a mucilaginous potion or dissolve in a spirituous elixir. It may also be admini tered in capsules, or even cachets. The usu dose for an adult is 1 gramme (16 grains), b as much as 1.5 grammes (24 grains), or eve 2 grammes, may without danger be give when pain and sleeplessness are intense.

A pet theory of Mialhe's was that calomel i the economy is decomposed by alkaline chl rides into mercuric chloride. Although co tradicted by many eminent chemists and phys ologists, this simple and attractive method explaining the efficacy of a substance as i soluble as calomel, has to this day been adopte and taught in most medical colleges. In vai were chemical experiments brought to be against the theory, its partisans, though losi some of their assurance, would find good re sons for holding on to their faith, objectio that the access of air is necessary, that th presence of organic matters is of importanc and that things in glass proceed differentl than in the economy. Now, Dr. Paul Adam in a communication to the Society of Ther peutics, appears to have dealt to the cherishe dogma its final blow. It is important, how ever, that ammonium chloride should be ex cepted from the argument, as its effects o calomel are undoubted. But chloride of so dium, as proved by former experiments re peated by Dr. Adam, will not dissolve calom in appreciable quantities when macerated fo three days with water in a close vessel. A dog's gastric juice was found equally inert a blood heat in a close vessel, and so was extrac of meat. Comparative experiments with cal mel alone, and calomel followed by the inge tion of very salty aliments, proved the effect to be exactly the same under the same circum stances. Without here detailing all the experi ments, we may quote the following conclusions arrived at with apparently good reason. I the contact of air, and near the boiling-poin of water, calomel may be decomposed int sublimate under the influence of alkaline chl ride, and chiefly ammonium chloride. Thi much has long been known. But in a clos place, even in the presence of organic matter salt will not decompose calomel to any appre ciable extent. Hence when calomel is no taken on an empty stomach, it is quite indif ferent how salty the food may be; and, lastly, sodium chloride is not incompatible with calomel.

PARIS, August 22, 1890.

* See the THERAPEUTIC GAZETTE, April, 1890, page 277.

BERLIN.

(From our Special Correspondent.)

THE INTERNATIONAL MEDICAL CONGRESS.

I write you this letter while standing under the shadow of the important days that have just passed. The Tenth Session of the International Medical Congress has just closed; and all its participants will cherish it with pleasure in their memories. Each one of the numerous American visitors, of which there were more than five hundred, will be able to confirm this statement, or, at least, I have learned as much at different times from ladies and gentlemen. On all sides there can be found only kind and congratulatory feelings towards the entertainers, and naught but a continuous strain of praises is to be heard about everything,—the city, as well as its sanitary and medical arrangements. We inhabitants of Berlin were, indeed, aware that in the last twenty years our city had begun to grow and bloom, and that it had made gigantic strides in every direction. But upon such an extraordinary occasion as that of an International Medical Congress—and, moreover, the first of these more important medical assemblies ever held in Berlin—it was perfectly natural for us to feel a certain anxiety as to whether success would crown our efforts; and that we have most amply succeeded, it will be no self-conceit for us ourselves to declare. Whoever has studied the scale upon which the details and arrangements were carried out must certainly confess that the efforts of all the contributors to the undertaking, especially during these latter months, must have been almost incalculable, in order to have prepared everything in a manner so suitable for the reception and entertainment of our guests. Moreover, not only the external and immediate results of the international session were a success, but its ultimate literary and scientific effects will be beneficial, as, it is to be hoped, will soon be proved by the sequel. Except during very short interruptions, the work was carried on in the separate sections from eight o'clock in the morning until five in the afternoon, in order to get over the amount of accumulated material. The programme of the Congress alone embraced sixty-eight departments. Eighteen different divisions were present, and the whole number of papers presented were, at least, eighty-eight, and during the session their number was increased by many more. Then, too, a scientific, medical gathering has been held, the mere memory of which fills with satisfaction us who had worried ourselves by prematurely fretting about it. Such an International Medical Congress has never met anywhere before, and it has afforded a fine view of the ceaseless advance made by therapeutics during the last decade.

In order to give an idea of the immensity of the Congress, I shall here quote the following figures: There were present five thousand seven hundred and thirty-seven members, one hundred and forty-three special visitors, and thirteen hundred and seventy-six ladies. Two thousand eight hundred and nineteen of the members were foreigners. In all there were issued seven thousand two hundred and fifty-six cards,—a number reached at no former Congress.

On Saturday, August 2, after an address by General Secretary Lassar, the meeting was declared open by Virchow in the Exhibition Park. These rooms, the magnificent art collection having been specially arranged by the artists of Berlin for the occasion, would have been a treat to see. Both speakers mentioned the great difficulty that had been sustained in their efforts to find a favorable place in which to hold their meeting, which question had been finally settled only by the untiring zeal of Chief-Marshal Gossler. At this point Kohler, director of the Imperial Board of Health, read an essay, which insured to the Convention the assistance of the authorities towards the success of the undertaking.

On the 4th of August the opening of the Congress proper followed in the magnificently decorated inclosure of Renz Square, which is calculated to hold more than five thousand persons. This gigantic space was filled to its last seat. Virchow spoke of the tremendous strides that Berlin had made during the last few years in sanitary science. Lassar dwelt on the relations of the Congress with the external world, and in this connection sent the following greetings to Kaiser Wilhelm and the Chancellor of the German empire through State Secretary Bottscher, and likewise to Prussia through her minister, Gossler; to the city of Berlin through Mayor Forckenbeck; and to the doctors of Germany through a present member of the German Society of Physicians,—viz., Alderman Graf.

At this point Joseph Lister, of London, delivered an essay, entitled "The Present Position of Antiseptic Surgery;" and Robert Koch, of Berlin, also spoke, "Ueber Bacteriologische Forschung," or "On Researches in Bacteriology." He announced that he had probably succeeded in finding a remedy against tuberculosis, and we hope shortly to learn more on

the subject from him. When an observer of so much authority as Koch makes such a remark as this, we may be certain that there is some positive fact to serve as the basis of his assertion. In the afternoon, arrangements of the different sections were seen to, and in the evening everything gathered for a delightful time in the Exhibition Park, where, after refreshments, a little dancing was indulged in by these serious men of science.

On the next day the assembly was broken up into various divisions, and in the evening the city of Berlin invited the visiting members to be their guests in the magnificently-decorated rooms of the court-house. On the great flight of stairs leading to the building stood, in great state, the mayor of Berlin, together with the members of the Board and other civil officials, in order to greet personally each visitor with a hearty handshake. An unbounded pleasantry reigned at every table.

On the next day, besides attending to the classification of the individual sections, a second general meeting took place. Bouchard presented an essay on "Le Mécanisme de l'Infection et de l'Immunité," or "The Mechanism of the Spread and Prevention of Disease;" and Axel Key, of Stockholm, addressed the meeting on "Die Pubertätserscheinungen und das Verhältniss derselben der Krankheitserscheinungen der Schuljugend," or "Development during Puberty, and its Connection with Disease in Youth." In the evening dinners were given at different places by the various sections, and the toasts delivered at them will not soon be forgotten by their participants, proving, as they did, that medicine is really an international science, and destined by the repetitions of such Congresses as this to bind into a universal brotherhood the different members of human society.

On the 7th and 8th instants the sessions were busy. On the evening of the 7th balls were given in five of the greatest places in Berlin. On the afternoon of the 8th there was a reception given to some invited members of the Congress by his majesty in the new palace at Pottsdam, and in his place Prince Friedrich Liepold received the guests. On Saturday, August 10, the last meeting took place in Renz Square. Virchow announced that it had been decided to accept an invitation of Baccelli's to hold the meeting of the next Congress at Rome. The following papers were then read: Horatio Wood, of Philadelphia, "On Anæsthesia;" Cantassi, of Naples, "Ueber Antipyresin," or "On Antipyresin;" Meynert, of Vienna, "Das Zusammenwirkung der Gehirntheile," or "The Unity of Cere Action;" Hockvis, of Amsterdam, "Ue Vergleichende Russenpathologie und die derstandsfaehigkeit in den Tropen," or "C parative Russian Pathology and the Capa of the European for Tropical Endurand Hereupon followed the valedictory addre of the president and various members. celli, of Rome, delivered an essay in La which was replied to by Virchow, whereu both men embraced each other amidst turous applause. In the afternoon the tions were concluded, and in the evenin concert at Knoll was given, to which physicians of Berlin had invited the mem of the Congress.

The pharmacological section was opened Professor Liebreich as president of this d sion, for which Professor Langgaard offici as secretary during the whole time of the C gress. Professor Liebreich was elected pr dent, and, upon his nomination, Mr. Schmie berg was chosen vice-president. Of the pa presented, the following are to be mention Mr. Pohl, "Ueber Ipernin;" Mr. Petre "Ueber die Hyperkenetische Wirkung Kaffeins;" Mr. Poulzon, "Ueber die Gif Bestandtheile des Aetherisches Filixextracte Mr. Robert, "Cetrarin;" Mr. Nitschm "Ueber Sozojodol;" Mr. Van der Cor "Ueber Phosphor;" Mr. Plugge, "Ue Andromedoloxin;" Mr. Zuhler, "Ue Ilex Paraguensis;" Mr. Schmidt (Astracha "Ueber die Natur des Fischgiftes;" Mr. P "Ueber Aufnahme und Vertheilung des C roforms im Thierkorper." Mr. Lauder Br ton showed the results of his experiments chloroform, and Mr. Liebreich demonstra his experiments in vacuo with chemical actions. As a mere recreation, a glance at works of dental pharmacology was here dulged in, embracing, as it did, from 1865 the year 1889, and edited by Messrs. Bi Boehm, and Liebreich, and revised by Wurzburg; likewise a work by Mr. Rob entitled "Untersuchungen aus seinem Lab torium." At the subsequent sessions, the lowing gentlemen, already members, elected honorary presidents: Petresco, Al toni, Lauder Brunton, Berlioz, Plugge, der Corput, Leech, Phillips, and Brondge Later there was a spirited discussion in re to the Pharmacopœias of different countr when Langgaard was chosen the medical Dr. Hirsch the pharmaceutical referee. Liebreich said that whenever, as at present, positive conclusion was arrived at immediat and when it were possible, that the quest

nswer serve as a basis for a further discus-
t some later meeting of an international
ter, and at the same time this was re-
d as a means by which a nearer relation
be constructed between scientific medi-
nd scientific pharmacy. The medico-
ific association has left a magnificent im-
on, especially as for each part of it there
ubjects which had their appropriate ob-

I propose to speak of the pharmaceuti-
hibition, as well as of several other sub-
of interest in regard to the Congress,
I write you my next letter.

LIN, August 17, 1890.

Notes and Queries.

NFECTION BY FUMES OF BURNING SULPHUR.

he question of the value of dry sulphurous
evolved by burning sulphur in a closed
, as a method of preventing the spread
fectious diseases, seems as yet to be un-
ed.

Detroit it appears that this method,
ito made compulsory in all cases of in-
us diseases, is about to be abandoned;
tion which, to our minds, seems unde-
le, for, at any rate, it has not been posi-
y established that the method is useless.
he following letter received from the
tary of the Michigan State Board of
lth, addressed to the health officer of
oit, seems to show that the action of the
oit city authorities does not receive the
tion of the State Board of Health:

MICHIGAN STATE BOARD OF HEALTH,
"OFFICE OF THE SECRETARY.
"LANSING, MICH., August 7, 1890.

MUEL P. DUFFIELD, M.D., *Health Officer of the City, Detroit, Mich.:*

DEAR DOCTOR:—In the Detroit news-
ers to-day, in a synopsis of your annual
rt, I see that you propose to displace
fection by fumes of burning sulphur.
mit me to ask your attention and that of
Detroit Board of Health to some facts
h bear on this subject, and which could
be had except through this office. Ex-
ing Detroit and Grand Rapids (the data
which cannot be profitably included
the data from the smaller places), the
ial reports to this office prove, beyond a
onable doubt, that isolation and disinfec-
do restrict diphtheria. I send herewith three diagrams, in which are condensed the experiences of health officers throughout Michigan in over a thousand outbreaks of diphtheria in the years 1886, 1887, and 1888. They prove that in those outbreaks in which isolation and disinfection were *neglected* there were on the average, over fourteen cases, with nearly three deaths, to an outbreak. They prove that in those outbreaks in which isolation and disinfection were *enforced* there was an average of only a little over two cases, with only about six-tenths of one death to each outbreak; and it must be remembered that these figures relate to instances in which at least one case of diphtheria had already occurred in the community, and that occasionally several cases occur at once, on the start. The method of disinfection referred to is that recommended by this State board, —namely, burning three pounds of sulphur for every thousand cubic feet of air-space in a room, infected articles being loosely spread out; and, because of movement of infected articles from the sick-room and from one room to another, all rooms in the house are disinfected, together with all contents.

"The evidence of the complete success of this method throughout the State (except in Detroit, and possibly Grand Rapids) is so conclusive that it seems to me certain that any failure in Detroit must be due to some imperfection in the application of the method of disinfection. I do not claim that Dr. Chapoton's suggestion is correct, that it 'was attributable to the carelessness of the disinfecting physician.' I think it is quite likely that the failure in Detroit is due to the use of *too little sulphur*, possibly also to the use of something else with the sulphur (possibly the exact weight of the sulphur may not be correctly estimated when mixed with another substance?).

"I respectfully submit that a *few* laboratory experiments should not be allowed to prevail against two hundred and fifty successful ones in the experience of health officers in restricting actual outbreaks of diphtheria in Michigan. During the last three years the known saving of life in Michigan from diphtheria, by isolation and disinfection, has averaged one and a half persons per day.

"However, there are many laboratory experiments which coincide with the experience of health officers in Michigan. I send you herewith a hektograph copy of an account of experiments by Pasteur and M. Roux, with the co-operation of Dujardin-Beaumetz, which prove both the points which I desire

to make,—first, that the burning of two pounds of sulphur per one thousand cubic feet of air-space is *not* always certainly effective; and, second, that three pounds *is* effective. This applies to a closed room. If there are openings through which the fumes may pass, more sulphur is required.

"Permit me to suggest that if any method of disinfection is adopted which involves the movement of infected clothing or other articles through the streets to a central disinfecting station, that no such removal be permitted until after such articles have been submitted to disinfection by fumes of burning sulphur, or by chlorine gas or other equally effective gaseous disinfectant, which shall thoroughly permeate the room and contents.

"From my practical experience and observation with such disinfectants, I wish to commend the method by fumes of burning sulphur *without* the addition of extra moisture to the atmosphere. When such moisture is added many valuable articles are destroyed which without such moisture would not be injured.

"I trust that this entire subject will receive thorough investigation by your board, and I shall be glad to be informed of the result. The State Board of Health desires to utilize, for the entire State, all new methods and all new facts which you can supply on this important subject.

"Very respectfully,

"HENRY B. BAKER,

"*Secretary.*"

Experiments by Pasteur and M. Roux, in the Cochin Hospital, of Paris, were carried on under the observation and with the co-operation of Dujardin-Beaumetz, physician to the hospital, and one of the most eminent medical authorities of France. Dujardin-Beaumetz makes a summary report of the experiments, in a work entitled "Les Nouvelles Medications."* A few paragraphs from pages 76 and 77 of this work show substantially as follows:

"Twenty grammes of sulphur to a cubic metre (1.53 per thousand cubic feet of air-space) destroys the different micro-organisms in a moist state, but it is necessary to increase this dose if one wishes to destroy some organisms in a dry state. In fact, since the last communication to the Academy M. Bardet and myself, aided by M. Chambon, ha tinued these experiments upon micro- isms in a dry state, and particularly vaccine virus. We have taken from th tules of vaccinia, scabs, which we h duced to fine powder, and placed in ch where were variable quantities of flo sulphur. When a dose did not exce grammes per cubic metre, the vaccine der did not lose its properties, and one by inoculating animals and infants ob vaccine eruption.

"With 30 grammes per cubic metre (pounds per thousand cubic feet of air-s the results obtained were uncertain,— times the powder loses its properties when the dose is increased to 40 gra per cubic metre (3.06 pounds per tho cubic feet of air-space) the inoculation always inactive. So, then, for vaccine probably for variola, if one desires to d the contagious 'germs' in a dry state, necessary to double the dose of 20 gra which we have already fixed.

"According to the experiments of V and of Legouest, 20 grammes are su for typhoid fever; while, according to V 40 grammes are necessary for the micro tuberculosis.

"(In the case of beef-tea cultures, dose must vary according to the organisms experimented with.)

"The results at which we have ar are absolutely confirmative of those w have been previously obtained by Polli Milan, Pettenkofer, of Munich, Doug Glasgow, Fatio, of Geneva, and Pietra S of Paris; and, finally, of the researche Vallin, published in his able work upon infectants."

* Translation for this note has been received from John H. Kellogg, M.D., Battle Creek, Mich.

THE DOSE OF THE ALKALOIDS O HYOSCYAMUS.

We have on several occasions publishe the GAZETTE discussions as to the pr dose of the alkaloids of hyoscyamus, a remarkable case of supposed poisoning hyoscyamine, which recently occurred Brooklyn, bears upon this point (*New Medical Record*, August 9, 1890.) A pat suffered from alcoholism and its accomp ing excitement and insomnia. He was scribed, it is stated, capsules containing eighth of a grain of amorphous hyoscya Two doses were taken, the second one hours after the first, and immediately ceeding the latter dose the patient bega show symptoms of hyoscyamine-poison

nd he died in a few hours. It is asserted hat the investigation showed that the crys-alline hyoscyamine was used instead of the morphous, hence the toxic effects. The rug-clerk who put up the capsules was ar-ested. By some mistake the body was em-almed, so that the autopsy showed nothing, xcept, perhaps, a hypertrophic cirrhosis. It s also stated that the doctor's original pre-cription has disappeared. The drug-clerk sserts that he put up the medicine just as it as written, and there is no proof to the ontrary, except that of a circumstantial haracter.

Even if there were, however, it is doubtful f the drug-clerk could be made responsible. For there is still the greatest discrepancy in standard text-books as to the dosage of the arious alkaloids of hyoscyamus. Brunton's work, published last year, makes the aston-ishing statement that the dose of hyoscyamine is from grain $\frac{1}{60}$ to grain 1. If a professor of pharmacology says this, what can one ex-pect of a drug-clerk? Several text-books also say that amorphous hyoscyamine is identical with hyoscine; and this is a serious error. Yet, even if it were true, cases are reported in which a dose of grain $\frac{1}{3}$ of hyoscine has been given without serious results.

The great disagreement with regard to the dose and toxicity of the hyoscyamus alkaloids is shown in the following notes:

Lemoine (1889) gives the dose of hyoscy-amine as grain $\frac{1}{60}$ to $\frac{1}{120}$.

Doses of grain $\frac{1}{40}$ and grain $\frac{1}{10}$ have caused toxic but not fatal symptoms according to Drs. West and Thompson.

The dose of hyoscyamine is the same as that of atropine, according to Nothnagel and Rossbach.

The dose of hyoscyamine sulphate is grain $\frac{1}{60}$ to grain 1, says Brunton, in 1889.

Hyoscyamine has maximum dose of grain $\frac{1}{3}$, according to Gnauck, 1881; that of hyoscine is grain $\frac{1}{60}$.

The U. S. Dispensatory gives the initial dose of hyoscyamine sulphate as grain $\frac{1}{60}$; that of hyoscine is not given.

The dose of hyoscine, according to Budder, in 1888, is grain $\frac{1}{180}$.

According to S. Fischer it is grain $\frac{1}{120}$ to $\frac{1}{60}$.

A dose of grain $\frac{1}{8}$ was given by mistake without bad effects by Dr. W. H. H. Githens.

Dr. King has used hyoscine in doses of grain $\frac{1}{114}$ to grain $\frac{1}{68}$.

Toxic symptoms were caused by doses of grain $\frac{1}{60}$ and $\frac{1}{76}$, also by a dose of grain $\frac{1}{100}$ Prentiss).

The maximum dose of hyoscine is grain $\frac{1}{200}$, according to Dornblüth, 1889.

Cases of non-fatal poisoning from doses of grain $\frac{1}{250}$, $\frac{1}{60}$, and grain $\frac{1}{120}$ are reported by Drs. S. W. Morton, J. S. Gibb, and W. A. Edwards.

E. B. Potter thinks doses of grain $\frac{1}{20}$ to $\frac{1}{10}$ are safe.

In all the above references nothing is said about amorphous hyoscyamine. This is a mixture of hyoscine with other substances, among them being a small amount of hyoscy-amine. Its effects are more of a hypnotic character than the pure alkaloid, and it has been extensively used in this city as a hyp-notic. The dose is much larger than that of the pure hyoscine or hyoscyamine.

BLEACHING TEETH.

A dirty-looking blue-tinged tooth in the front of the mouth is so disfiguring to the appearance that the subject seeks the aid of the dental surgeon. Such teeth are too often recklessly and ruthlessly excised, and an arti-ficial crown attached to the root. The result is brilliant as far as appearance is concerned, and does not call for any great amount of labor on the part of the operator, but, at the same time, it is a question whether the true conservative treatment would not rather be to render the tooth presentable by bleaching and subsequent filling, which is practicable in a large number of cases. The most com-mon cause of staining is the death of the pulp and the infiltration of the dentinal tubules with the products of its decomposition. An-other cause, which is much more common than it should be, is the insertion of amalgam stoppings, especially those containing copper, and this stain unfortunately appears to be indelible. Two general classes of substances have been introduced for bleaching teeth,—oxidizing agents, such as chlorine com-pounds and peroxide of hydrogen, and re-ducing agents, as sulphurous acid. The treat-ment by means of peroxide of hydrogen is extremely simple, and gives good results; but it appears from recent experiments by Dr. Miller, of Berlin, that this preparation acts upon the dentine, removing the organic matter. Sulphurous acid is also open to a similar objection, in that its prolonged use will dissolve out the lime salts. Generally the chief chemical used for bleaching teeth is chlorine or some of its compounds. Where chlorine is used steel instruments are inad-

missible, as the salts of iron which would be formed would rapidly discolor the teeth. The instruments must be constructed of gold, platinum, or ivory. In order to prevent the chlorine from passing through the foramen at the end of the root, which would probably cause acute periostitis, the apical third of the pulp-canal is solidly filled with gold. The tooth is isolated at the gums, the soft parts being protected by the adjustment of the rubber dam, and the tooth thoroughly dried by means of a warm-air syringe. The pulp-cavity is then washed thoroughly with ether to remove any fatty material. Various preparations of chlorine have been recommended, but perhaps the simplest is freshly-made chlorine-water, as suggested by Dr. Wright, of Richmond, U.S.A., which is forced into the pulp-chamber by means of a syringe. Three or four sittings of an hour each are usually sufficient to remove the discoloration, when the tooth can be filled in the ordinary way.—*Lancet*, July 19, 1890.

A TEST for the purity of drinking-water is given as follows by PROFESSOR ANGELL, of the Michigan University: "Dissolve about half a teaspoonful of the purest white sugar in a pint bottle completely full of water to be tested, tightly stopped; expose it to daylight and a temperature up to 70° F. After a day or two examine, holding the bottle against something black, for floating specks, which will betray the presence of organic matter in considerable proportion.—*Cincinnati Lancet-Clinic*, July 26, 1890.

THE CHEMISTRY AND PHYSIOLOGICAL ACTION OF PHOSPHOROUS OXIDE.

The June number of the *Chemical Society's Journal* contains a full account of the recent research on phosphorous oxide which has been carried out jointly by PROFESSOR THORPE and MR. A. E. SUTTON, of the Normal School of Science, South Kensington (*Lancet*, July 26, 1890). It is a noteworthy fact that it is seldom that an inquiry into the nature of well-known inorganic elements results in the full confirmation of the characters which have usually been assigned to the substance experimented with. On the contrary, in many instances surprising results are often obtained, inasmuch as properties are frequently discovered which are found to be of a nature entirely new and opposite to those which are described in the text books. This in a measure is probably due to the circumstance that investigators have of late years devoted their time chiefly to the fascinating and fashionable field of organic chemistry. The authors have in the present research obtained phosphorous oxide by the slow combustion of phosphorus in an apparatus of special construction. So prepared, it is described as a white wax-like solid, which melts at 22.5° C. to a clear, colorless, and mobile liquid, resolidifying at 21° and boiling at 173.1° C. The formula, as deduced from the vapor density and Raoult's recent method, is P_4O_6, thus exhibiting perfect analogy to arsenious and antimonious oxide, As_4O_6 and Sb_4O_6 respectively. At high temperatures it is resolved into tetroxide and free phosphorus. Sunlight changes it to orange yellow, and ultimately to dark red; the exact chemical nature of these changes has not yet been investigated. More interesting is the action of water, alkalies, alcohol, etc., upon it. Phosphorous oxide *slowly* dissolves in water, and *in a few days* forms a solution of phosphorous acid. Most text-books describe the oxide as possessing a strong affinity for water, so much so that it combines with it with such violence that a hissing sound is produced, as with a red-hot iron. With hot water, on the contrary, the reaction is very energetic, red phosphorus, the suboxide, spontaneously inflammable phosphoretted hydrogen, and phosphoric acid being violently produced. Cold alkalies, such as caustic potash, act similarly to cold water, resulting in the gradual formation of phosphite of potassium. Hot alkalies act like hot water, phosphate and phosphoretted hydrogen being formed. Phosphorous oxide ignites in contact with alcohol, forming diethylphosphorous acid. As would be expected, it readily oxidizes to the pentoxide on exposure to air or oxygen. Under diminished pressure, oxidation is accompanied by a luminous glow, which is instantly stopped when the pressure is restored. Ozone is not formed. The melted oxide readily ignites in the air. Finally, phosphorous oxide has a well-marked physiological effect, and the authors think that the influence of phosphorus on the glycogenic functions of the liver and on tissue-change may not improbably be due to this substance. It is known that caries is produced in those persons engaged in match-factories only when exposed to the fumes, for Dr. Lauder Brunton has found that when the bone of an animal fed by phosphorus is exposed to the air, no carious change takes place; but when it is exposed

to the fumes, caries is produced. And, further, it has been noticed among match-making people that only those who have carious teeth suffer from necrosis of the jaw. This may possibly be explained by the fact that the fumes from phosphorus consist largely of phosphorous oxide, for by merely drawing air over phosphorus a deposit possessing all the characters of phosphorous oxide is obtained. The odor, moreover, is identical with that of phosphorous oxide, and also with the peculiar smell that invariably accompanies the making and handling of the composition used for match-tipping. Under these circumstances, it is extremely probable that pure phosphorus possesses no smell at all. Professor Thorpe and his colleague are to be congratulated on the interesting and important results they have obtained, both practical and theoretical. Chemists, at least, will not fail to recognize the fact that much valuable and useful information has been added to their storehouse of knowledge.

NITROGLYCERIN IN ASTHMA.

Dr. Hofman has recommended subcutaneous injections of nitroglycerin in doses of $\frac{1}{120}$ to $\frac{1}{160}$ of a grain. In angina pectoris and severe asthma he claims that the effects of these injections are remarkable. No objectionable after-effects have yet been observed.—*Pharmaceutical Journal and Transactions*, June 28, 1890.

FOR THE RELIEF OF EARACHE.

Take 5 parts of camphorated chloral, 30 parts of glycerin, and 10 parts of oil of sweet almonds. A piece of cotton is saturated and introduced well into the ear, and it is also rubbed behind the ear. The pain is relieved as if by magic, and if there is inflammation it often subsides quickly.—*Medical Brief.*

THIOL IN SKIN-DISEASES.

Professor Schwimmer, of Buda-Pesth, has used thiol—a substance very similar to ichthyol, but free from unpleasant odor, and made by heating gas-oil with sulphur—in a large number of skin-diseases with remarkable success. In herpes zoster, acne simplex, and rosacea, in moist eczema and in burns, he paints the affected part with a solution in distilled water, of the strength of 1 in 4, twice a day, not washing the application off for two or three days. In some long-standing cases the washing is still longer delayed. In some cases an ointment (1 in 3) was employed, and in some the dry powder itself.—*Lancet*, July 5, 1890.

THE TREATMENT OF CROUP.

Dr. Osiecki has proposed the insufflation of a powder composed of 22½ grains of tannin and 30 grains each of sublimed sulphur and chlorate of potassium in the treatment of croup (*Répertoire de Pharmacie*, July 10, 1890).

The *Concours Médical* of June 21, 1890, states that the druggists to whom this prescription was sent very properly refused to make it up, on the ground that such a mixture would inevitably cause the death of the child, stating, as an explanation, that a mixture of the substances so prescribed forms an explosive product. Dr. Osiecki, however, states that on mixing the three powders in a box and shaking them, they may be caused to unite without any danger of deflagration. Nevertheless, the editor of the *Répertoire de Pharmacie* believes, an opinion with which we coincide, that the druggists would be perfectly warranted in refusing to make up such prescriptions, and that a better plan, if there is any value attendant to this prescription, would be to perform the insufflation separately with the chlorate of potassium, and then with the mixture of sulphur and tannin.

THE EFFECT OF OIL AND OTHER SUBSTANCES ON THE SECRETION OF BILE.

Dr. Rosenberg, by means of establishing biliary fistulæ in healthy dogs, has been able to extend somewhat our knowledge of the effects of different foods and drugs on the secretion of bile. It was found that towards the end of the three months during which the experiment continued, the quantity of bile diminished, but its consistency increased, probably through a deficiency of water. When the animals were kept without food, it was found that the flow of bile increased and decreased at the same periods of the day that it did when they were fed in the ordinary way. During the first hour of digestion the quantity increased, attaining its maximum during the second hour, after which it rapidly decreased, the consistence increasing as the quantity decreased. When fatty or oily substances were ingested, a stimulating action on the secretion was produced, a larger quantity

of bile being secreted than when albuminoids or carbohydrates were taken, even large quantities of these substances producing far less bile than much smaller quantities of oil and fat. Indeed, these latter bodies possess a higher power of stimulating the secretion of bile than any other food or drugs, with the single exception of ox-gall, which, when taken by the mouth, increases both the quantity and the consistence of the bile excreted. Salicylate of sodium increases the quantity but diminishes the consistence of the bile. The action of Durand's remedy—turpentine and ether—was found to be entirely due to the turpentine, which has a high stimulating power for the bile-secreting function of the liver. Carlsbad salts were tried both in gelatin capsules and in solution; their effect was to decrease the quantity and to increase the consistence.—*Lancet*, July 26, 1890.

THE ACTION OF MONO- AND BICHLORAL ANTIPYRIN.

At the meeting of the Société de Biologie, held July 5, 1890, Drs. Quinquaud and Schmidt stated that as the result of their investigations they had found that the monochloral antipyrin possessed the advantages over chloral of more ready administration and more marked hypnotic effects, with less marked action on the circulation. They were not, however, prepared to make any definite statements as to the analgesic properties of this compound.

On the other hand, they state that the bichloral antipyrin possesses no advantages over the monochloral antipyrin or the chloral hydrate. The authors thus serve to confirm the investigations of Dr. Gley on this subject.

INJECTIONS OF ETHER FOR NEURALGIA.

Dr. Kums, of Antwerp, has conceived the plan of using subcutaneous injections of ether in the treatment of neuralgia. For the most part the patients on whom this method was practised were subjects of rheumatism. The quantity of ether employed for each injection is a cubic centimetre; in other words, the amount which an ordinary Pravaz syringe will hold. The author prefers to use Hoffmann's anodyne, containing equal parts of ether and alcohol. The injection should be made as near the seat of pain as possible. Some smarting ensues as the injection is made, but this soon passes off. The injections have been used by the author in various cases of sciatica, cervico-brachial neuralgia, cranial and facial neuralgia, and many other neuralgic conditions. Often a single injection has sufficed. In a certain number of instances two or three have been found necessary.—*Medical Press and Circular*, July 30, 1890.

OTORRHŒA PELLETS.

Dr. Shield in the *Practitioner*, as quoted by the *American Journal of Pharmacy* for August, 1890, recommends the use of pellets containing various medicinal substances prepared with cocoa-butter. After inserting a pellet, the patient is ordered to lie down with the affected ear uppermost, when the pellet will melt and the liquid come into contact with the affected parts.

In this connection it may be mentioned that a solution of boric acid, 6 parts to 150 each of glycerin and water, has been recommended as very efficient in softening ear-wax; the solution is warmed, and 5 to 10 drops of it are put in the ear twice a day.

ANÆSTHETIC MIXTURES.

In an article by Oesterlein on chloroform narcosis (*Deutsche Med. Zeit.*), it is stated that the purest chloroform is made use of in Germany. Von Nussbaum perfumes it with a few drops of oil of cloves, to disguise the sweetish odor. Other mixtures are the following: The English mixture: Chloroform, 2 parts; alcohol, 1 part; ether, 1 part. The Vienna mixture: Ether, 3 parts; chloroform, 1 part; or, chloroform, 3 parts; alcohol, 1 part; ether, 1 part. The French mixture: Chloroform, 4 parts; alcohol, 1 part. The Strasburg mixture: Chloroform, 1 part by measure; dimethylacetal, 2 parts by measure. Methylene bichloride and its compounds with ethyl and methyl alcohol, appear to yield no better results than chloroform. The lethal dose of chloroform is very variable; while death has followed from 1.5 grammes, by the exercise of greater caution as much as 200 grammes has been given with impunity. Haffter mentions it as characteristic of the bromide of ethyl narcosis that sensation is abolished long before consciousness.—*Druggists' Circular and Chemical Gazette*, August, 1890.

—THE—

Therapeutic Gazette.

Whole Series, Vol. XIV. | DETROIT, MICH., PHILADELPHIA, PA., | October 15, 1890. | Third Series, Vol. VI. No. 10.

CONTENTS.

Original Communications.

PAGE

New Therapeutic Agencies. By Professor Dujardin-Beaumetz..... 649
The Operative Treatment of Strictures of the Male Urethra. By John B. Deaver, M.D..... 656
Some Observations upon the Gastro-Intestinal Disorders and the Diet in Pulmonary Phthisis. By Karl von Ruck, B.S., M.D..... 662
Weak Heart and its Treatment. By William A. Hammond, M.D..... 667

Leading Articles.

Insomnia and Hypnotics..... 674
Treatment of Gonorrhœal Rheumatism 676
The Action of the Iodides and Iodine on the Blood-Pressure..... 678

Reports on Therapeutic Progress.

New Methods of treating Erysipelas..... 673
On the Present State of Bacteriology—Therapeutic Results..... 679
The Effects on Nutrition of Artificial Dermatitis..... 681
A Method of employing Antisepsis in Recent Anterior Urethritis..... 682
Cannabis Indica in Diseases of the Stomach..... 684

PAGE

The Recognition and Prognosis of Acute Painless Dry Pleurisy..... 685
Functional Disorders of the Heart..... 688
The Action of the Soluble Salts of Strontium on the Organism..... 689
A New Method of examining the Liver 690
Artificial and Natural Digestions..... 690
Chloride of Methyl as a Local Anæsthetic..... 691
Simulo..... 692
Salipyrin or Salicylate or Antipyrin..... 692
Tests for Glycosuria..... 692
Condition of the Kidneys in Poisoning by Mercury..... 693
Delphinium Staphisagria..... 694
The Treatment of Whooping-Cough by Bromoform..... 694
Cetrarin..... 695
Salol in Cholera..... 696
Establishing Tolerance for the Tubercle Bacillus..... 696
Localization as an Aid to Diagnosis and Treatment of some Forms of Headache..... 697
Inoculation a Protection against Tuberculosis..... 698
The Use of Hypodermic Injections of Caffeine in the Treatment of Post-Partum Hemorrhage..... 699
Trional and Tetronal..... 699
The Application of Electrical Endosmosis in the Treatment of Gouty Concretions..... 700
Sulphaminol as an Antiseptic..... 702
The Physiological Action of Colchicine 702
Value of the Diazo-Reaction..... 703
Creosote in Phthisis..... 703
The Action of Salol on the Kidneys..... 704
Influence of Alkalies on the Excretion of Uric Acid..... 706

PAGE

The Abortive Treatment of Herpes by Alcohol Solutions..... 706
Intestinal Antisepsis in Typhoid Fever.. 706

Reviews..... 707

Correspondence.

Paris Letter..... 708
Berlin Letter..... 711
On the Value of Hot and Dry Air..... 713
Subcutaneous Injection of Quinine..... 714
Rare Complication of Whooping-Cough 715

Notes and Queries.

The Toxic Principle of Pyrethrum Flowers..... 673
Case of Poisoning by "Wild Melons"... 716
Detonation of Tablets composed of Chlorate of Potassium and Chloride of Ammonium..... 716
Death from an Overdose of Paraldehyde 716
Tests for Albumen in Urine..... 717
The Relative Germicidal Powers of Disinfectants..... 717
Diphtheria of the Meatus Urinarius..... 718
A Ready Mode of Preparation of Aristol 718
Hypodermic Artificial Respiration..... 718
The Curability of Myxœdema..... 718
Removal of a Portion of the Liver by the Elastic Ligature..... 719
"Bradycardia," or Slow Action of the Heart..... 719
Treatment of Cholera..... 720

Original Communications.

*NEW THERAPEUTIC AGENCIES.**

LECTURE VII.—ON THE TREATMENT OF DIABETES AND POLYURIA.†

By Professor Dujardin-Beaumetz,‡ Paris, France.

GENTLEMEN:—I finished my last lecture by the remark that to the diuretic treatment counselled in renal insufficiency we might oppose an anuric treatment, meaning a class of medicaments which diminish the urinary secretion. The medicines which constitute this category are all derived from the new group of antithermic analgesics.

But I do not desire to limit my lecture to this subject alone, and I will improve the opportunity to set forth the treatment of a disease in which polyuria is a very prominent symptom. I refer to diabetes. I do this the more willingly because the Committee of Organization of the Berlin Congress has done me the honor to ask me to open the discussion on this subject, and you will find in this lecture the principal points which have served as the basis of my communication.

Be it understood that I do not intend to

* A second series of "New Medications," published in 1887.

† From advance sheets, revised by the author (translated by E. P. Hurd, M.D.). Lectures delivered in Cochin Hospital, Paris, France.

‡ Member of the Academy of Medicine, Physician to the Cochin Hospital, Paris, France.

give a thorough exposition of the treatment of diabetes, and must refer you therefor to my "Clinical Therapeutics"* and "Alimentary Hygiene,"† but I intend to devote this conference to the new acquisitions which the last few years have made to this department of therapeutics. This question of the treatment of diabetes is one of the most interesting subjects in therapeutics, and brings out at once this curious fact that, if the theories of diabetes have considerably multiplied, and we still see the most contradictory opinions maintained concerning its pathogeny, there seems to be unanimous or almost unanimous agreement respecting the treatment, and in particular the dietetic treatment, which should be prescribed for diabetic patients.

The very limitation of the subject before me will be my excuse for not entering into all the questions of experimental physiology and experimental medicine which have lately been discussed, with the end of elucidating the nature of this still obscure affection.

You will permit me, at the same time, to remark how puerile is the distinction once so much insisted upon between diabetes and glycosuria. I am convinced that this distinction does not exist, for if we refer to the latest works on this subject, it seems proved that diabetes is the resultant of a great number of pathological states, and that three organs in particular have to do with this symptomatic aggregate,—the liver, the pancreas, and the brain. It is, then, an accepted tenet that diabetes is always symptomatic, and I do not see any line of demarcation between glycosuria and diabetes properly so called, for diabetes as an essential disease does not exist. It is better, therefore, to abandon the old distinction, and use the terms glycosuria and diabetes synonymously.

The prognosis of diabetes depends entirely on the results which can be obtained by a rigorous dietetic regimen, and this point can be settled in a relatively short space of time. The quantity of sugar voided in twenty-four hours plays in this respect only a secondary part, and a patient who is passing as much as six hundred grammes (twenty ounces) of sugar a day, may have only a mild form of diabetes.

In fact, I hold to the proposition, that any diabetic patient who, after having rigorously followed a severe dietetic treatment for a fortnight, finds that the sugar has entirely disappeared from his urine, may be looked upon as having diabetes in a light form. It is to be understood that we cannot use the word *cure* in reference to these cases, as that it will always be necessary to supervise the diet if we would not see sugar reappear in the urine. But if a rigid dietary regimen be carried out, the patient will likely escape all the consequences and all the complications which attend the diabetic.

When, on the other hand, despite the rigorousness of the treatment, you can only reduce by a minimum quantity the proportion of sugar secreted in twenty-four hours, you may affirm that the diabetes is grave, and that it will pursue a rapid course, and that it will be next to impossible to arrest its progress.

Between the mild and grave forms of diabetes there exists a third form,—that of moderate intensity. To this group belong those patients in whom, notwithstanding the rigor of the treatment, you never succeed in causing the sugar to completely disappear from the urine, and there will always be a quantity equal to ten or fifteen grammes excreted in the twenty-four hours. In these patients, although the prognosis is much more favorable than in the cases of grave diabetes, you will often see supervene at a period possibly far remote from the onset of the disease, cerebral accidents characterized particularly by *ramollissement*. Bouchardat, who has well studied this diabetes of moderate intensity, was one of the first to point out this fact, and in the very numerous observations which I have made I have quite often met with it.

There are still two points on which I desire to dwell before taking up the subject of treatment,—the question of ultimate recovery and that of individual differences in the daily excretion of sugar in the urine.

Can we cure diabetes, or, in other words, can we cause the complete and permanent disappearance of sugar from the urine? Such complete recovery is so exceptional in diabetes that, as a general rule, I believe that if by an appropriate treatment we may banish sugar from the renal secretion, the patient none the less, keeps a predisposition to glycosuria, so that when once he abandons his strict dietetic regimen, he sees the sugar reappear.

As to individual differences which the secretion of sugar in diabetes presents, some curious facts may be mentioned. There is

* "Clinical Therapeutics," Detroit edition, article "Diabetes," p. 285.

† Dujardin-Beaumetz, in *Boston Medical and Surgical Journal*, vol. cxv. p. 465, and "Hygiene Alimentaire," p. 175.

rst, the difficulty which we find in rendering n individual not predisposed to diabetes lycosuric. In some recent experiments hich I have made on the action of glucose s a diuretic, I have shown how difficult it is o render a man or an animal glycosuric. hus, I have administered from one hundred o three hundred grammes of glucose daily, ithout ever being able to find sugar in the rine, and I have found it necessary to give o hares a quantity equal to thirty grammes er kilogramme of the weight of the body efore the animal became glycosuric. So, hen, we have obtained a first fact,—the resistnce of certain individuals to the production f even alimentary diabetes.

The second fact is quite as interesting,—iz., that if you can succeed by an appropriate treatment in causing the sugar to disappear from the urine in cases of diabetes, you annot proportionally augment the sugar in he urine. Let me explain. We will suppose patient, who, without following any dietetic egimen, voids daily one hundred and fifty rammes of sugar in his urine. You subject his patient to a diet exclusively of starchy ood, and this figure of one hundred and fifty rammes of sugar is not exceeded, or is carcely exceeded, so that with a great numer of diabetic patients there is a limit to the roduction of sugar.

Lastly, a third fact. You will often see in diabetic patient the return of sugar in the rine, despite the observance of a rigorous limentary regimen. The most active and important factor in bringing about this return is mental influence of some depressing nature, and in a great many diabetics who, by an appropriate diet, have got rid of their sugar, and in whom, despite the observance of a strict diet, sugar reappears, you may affirm either the existence of too prolonged mental effort or the influence of too powerful emotions.

From what I have just said, you see the necessity of having recourse to frequent examinations of the urine in diabetic patients. In France we have a ready means of making these analyses by the method first brought into vogue by Duhomme,—a method based upon the employment of the officinal dropping-tubes and Fehling's solution. This apparatus, which is of very little cost, enables patients themselves to make quantitative analyses of the sugar,—analyses which, if they have not the exactness of the saccharometer, re at least sufficiently exact for all practical urposes.

After these rather long prefatory observations, I come to the main part of my subject.

The treatment of diabetes is both pharmaceutical and dietetic, the latter being much the more important. Valuable acquisitions have been made to both these departments of therapeutics the last few years, and it is to the critical discussion of these gains that I shall devote this lecture. I will begin with dietetics.

As I have just said, one can accomplish more by diet than by medicine, and everybody is agreed that the suppression of starches and of sugars is the most active of curative agents in diabetes. There seems to be also agreement as to the necessity of giving predominance to fats in the diabetic dietary, and, without adopting the exclusive adipose regimen of Cantani, I would, nevertheless, advise the plentiful use of fatty foods.

The almost absolute privation of starchy foods, and in particular of bread, is one of the most delicate and difficult points in the diet of diabetes. Bread is, in fact, a food almost indispensable; hence the earnest attempts made to replace it by something of a like nature which contains a minimum of starch. Certainly, the introduction of gluten bread into the dietary of these patients was a great progress, and for this we must hold in lasting and grateful remembrance the name of my regretted master, Bouchardat.

Unhappily, there are various kinds of gluten bread, and chemical analysis has shown that there exists in commerce, under this name, bread containing almost as much starch as ordinary bread. We may even say that the more agreeable to the taste the bread made of gluten is, the more it contains of starch, so that very often patients who think they are eating gluten bread, continue to void sugar, which comes from this very aliment.

Hence the endeavor has been made to replace gluten bread by other kinds of bread. I will say but little of the almond bread proposed by Seegen, which we make but little use of in France, but I shall call your attention particularly to *soja bread.*

There is a bean, the product of the *Glycina hispida*, which supplies the Japanese with an article of food much prized and a kind of cheese greatly in demand. This bean is today cultivated in Europe on a large scale. It contains hardly any starch, as is shown by chemical analysis and by the microscopic sections which Blondel has made; but, on

the other hand, it contains a purgative oil,—the oil of soja,—which renders panification very difficult.

At the same time, there is made to-day out of the soja bean, with or without an admixture of gluten, a kind of bread which is liked by many diabetics, and which is superior to the best gluten bread. Unhappily, the special and rather strong taste of the soja will always restrict the use of this bread.

Under the name of fromentine and of legumine, certain pharmacists have utilized the embryos of wheat, of beans, etc. These embryos are to-day easily separated from the grain by reason of the new processes of grinding and of bolting cereals. These embryos contain likewise a purgative oil,—the oil of wheat; this oil, as in the case of soja, renders the panification of this flour difficult. At the same time, some recent tentatives, made by Douliot and by Bouvet, give us reason to hope that we shall succeed with these farinaceous preparations in making a bread deprived of starchy matters or containing but very little; while, at the same time, such bread will be very rich in nitrogen.

If the so-called gluten bread, according to its fabrication, contains variable and often considerable quantities of starchy matters, the same objection may be made to the gluten cakes, into whose composition as much saccharifiable material enters as into ordinary cakes; hence, in my view, they should be banished from the dietary of the diabetic.

In taking for my basis the analyses of Bousingault and of Mayet, I was one of the first to propose the substitution of potatoes for gluten bread. These analyses, in fact, show us that while the best gluten bread gives for every one hundred grammes twenty to thirty grammes and more of sugar, potatoes give only 8.30 per cent. of saccharine material.

But some practitioners, making therapeutic deductions from these analyses, have sanctioned a too free use of potatoes to their diabetic patients. You must remember that it is in equal weights that you should compare gluten bread with potatoes. A good-sized potato when boiled will weigh more than one hundred grammes. If the patient eats several of these potatoes at a meal he will lose all the benefits of this dietary, for one hundred grammes of bread will perfectly suffice for two meals. It will be necessary, then, to limit to one potato—boiled or baked and well buttered—the usage of this vegetable as a substitute for bread in the dietary of diabetes.

It is a similar consideration—that of weig —which leads me to prefer the crust of bre to the crumb. I am aware that the crust co tains more saccharifiable matters than t crumb, being composed largely of dextri but people eat much less of the crust than the soft part, and this is especially the ca with the diabetic patient, who has general by the fact of his disease, bad teeth. So account of the small bulk which he will co sume during the day, you see that it is bet to limit your patient to the crust, while at t same time his desire for bread will in a measu be satisfied.

There is another interdiction which is rarely observed by the diabetic,—I refer to the ab solute suppression of fruits. The sugar of fruits is of a kind which very readily passes out in the urine of the diabetic; and I have in my practice seen a great many patients who obtained no benefit from dieting by reason of their persistence in eating ripe fruit. Be strict, then, in prohibiting fruits to such patients.

I hold the same view with regard to milk, which I think should be prohibited. One of the most disastrous methods of treatment of diabetes is that proposed by Donkin, who recommended that patients should be subjected to an exclusive milk diet.* I have always seen milk taken in almost any quantity augment the sugar in the urine, and especially provoke polyuria. This is easily explained when you consider the diuretic action of lactose and of the glucoses in general. I would then advise forbidding milk to diabetics. Be it understood that I speak only of diabetes without albuminuria, for when you have the latter complication you will have to weigh the disadvantages of urinary insufficiency along with those produced by the diabetes, and if the former predominate over the latter, you must put your patient on a milk diet.

The choice of drinks is a matter of considerable importance in the dietetic regimen of the diabetic. These patients are, by the very fact of their disease, great drinkers; they are, moreover, individuals who can support without intoxication considerable quantities of alcohol, and this by reason of the functional ac-

* A. S. Donkin, in the *Dublin Journal of Medical Science*, November, 1875. He advised *skimmed milk*, and insisted that the skimmed-milk regimen should be exclusive. He permitted from four to twelve pints in the twenty-four hours, the constipation entailed by this regimen to be combated by an occasional dose of castor oil. This treatment at first had a large vogue.—Tr.

tivity of their kidneys, which enables them to eliminate it readily. You will not, then, be surprised to frequently meet with alcoholism in the diabetic. So, then, it is well to forbid alcohol in all its forms, distilled or fermented, to the diabetic, and if they must take anything of the kind, let it be simply wine and water. My master, Bouchardat, who, in the earlier part of his medical career, counselled pure wine, afterwards saw reason to make a change in this particular, and would permit only diluted wine, all distilled liquors being prohibited.

Patients cannot be too sparing in the indulgence of beer, and all the extracts of malt, indiscriminately, should be prohibited, by reason of the more energetic saccharification which takes place under the influence of those beverages.

Tea, coffee, maté, the preparations of kola, are, on the contrary, very favorable in the hygiene of the diabetic. All these substances have caffeine for their basis, and tend to tone up the often-depressed organism of the diabetic. Hence, I would freely allow these drinks, and the introduction of saccharin has removed the only objection against their use.

Saccharin represents a great progress in the alimentary hygiene of the diabetic, and since I have been prescribing it, I have found nothing but advantages in its employment, without any harm or evil, or, at least, the cases where I have seen gastric pains supervene under the influence of saccharin are so exceptional that they do not disturb the general law.

Thanks to saccharin, we can give all these stimulating drinks in a very palatable form. It may even be put to certain culinary usages, and it has enabled us to do away with the employment of glycerin, which was more or less harmful by reason of the irritation which it produced in one way or another, and the toxic symptoms which may result from its ingestion in large doses, symptoms which Audigé and I have studied under the name of glycerism.

There is one point in the hygiene of the diabetic which is too often overlooked, I refer to that which concerns the hygiene of the buccal cavity. Most diabetics are affected with purulent gingivitis, which may be the starting-point of systemic infection. The researches of Vignal and Galippe have taught us that the buccal cavity contains a great number of micro-organisms, and among them there may be those of an infectious kind, especially if there be any suppuration. Hence, it would be well for you to enjoin your patients to rinse their mouths after meals with antiseptic solutions. The one which has given me the best results is as follows :

Acid. boric., 25 grammes;
Acid. phenic., 1 gramme;
Thymol, .25 gramme;
Water, 1 litre.

Add to the above :

Spirits of anise, 10 grammes;
Spirits of peppermint, 10 drops;
Alcohol, 100 grammes;
Cochineal, q.s. to color. M.

To be diluted with as much water before using.

To prescribe the alimentary and buccal hygiene of diabetics is not enough, you must add other hygienic prescriptions, and in particular gymnastics.

It is known that two great doctrines have been maintained from the point of view of the pathogeny of diabetes. Some authorities, as Bouchard, affirm that diabetes depends on a retardation of nutrition ; others, as Lecorché and Robin, that it results from an exaggeration of the functions of organic life.

I confess that, from a clinical, and especially from a therapeutic, point of view, the first of these theories is more captivating than the second. It is, in fact, at the time when the vital functions tend to become enfeebled that diabetes ordinarily appears, and all the observations of Robin were made on old men. As for the treatment, it is in giving a new activity to nutrition that we combat diabetes, and Bouchardat was one of the first to insist upon a special training for the diabetic. All therapeutists are now at one on this point.

Be it understood, this training must not exceed certain limits, and I am of opinion that prolonged fatigues are more injurious than useful to the diabetic.

All kinds of exercise in moderation are favorable, and particularly those which are taken in open air, and especially in the clear air. I recommend, above all, gardening when the patient is capable of it ; and, when his social condition forbids horseback-riding, fencing, gardening, Alpine excursions, gymnastics, I advise joinery, which everybody can practise without expense and in a place of small dimensions.

Hydrotherapy, by the harmony which it produces in the organic functions, by the activity which it gives to the cutaneous ex-

cretion, is a precious adjuvant to the hygienic medication, and, save in special cases which contraindicate its employment, I subject my patients to appropriate hydrotherapic practices.

The question of thermal treatment will properly find a place here between the dietetic and pharmaceutical treatment of diabetes. There is little to say that is new about the employment of mineral waters in diabetes, and it is always the alkaline waters—sodic carbonated and arsenical—that occupy the first place in this treatment.

Many explanations have been given as to the beneficial action of alkaline waters in diabetes. I believe that the best is that they act directly not on the liver, but on nutrition in general, and thus do good. I know that some experiments made by Coignard have shown that the alkaline waters have a retarding effect on the transformation by germination of starch into glucose, *in vitro*, but I persist in believing that it is by stimulating the functions of the cells that these waters benefit. At any event, whether employed at the spas or in the form of bottled waters at the table, they should be a part of the daily treatment of the diabetic.

Martineau has given in connection with this alkaline and arsenical treatment a formula which renders good service. It must be understood that this formula does not give the results announced by Martineau, who claimed to have cured thereby sixty out of seventy cases, but the association of carbonate of lithium with arsenic gives, in diabetes of arthritic origin (and the greater number of cases are of such origin), excellent results. Without having recourse to the rather complex prescription which he has formulated, I order the patient to take before each meal, in a tumbler of effervescent alkaline water (Vichy, Hauterive, Vals, St. Jean, or Rigolette), five grains of carbonate of lithium, and I add two drops of Fowler's solution.

But the most considerable progress which has been made in the pharmaceutical treatment of diabetes is connected with the use of medicines from the group of antithermic analgesics. It had already been observed that certain drugs which act on the cerebro-spinal axis, like quinine, had a favorable effect in diabetes, and recently Worms showed the advantages derivable therefrom. The same was true of bromide of potassium, which was so much vaunted by Felizet.

I have, in fact, myself shown that these antithermic medicines possess an elective action on the cerebro-spinal axis, and in particular on the thermogenic centres of the spinal cord, and it is this action which enables us to explain their effects on the animal temperature. I have even shown you that we may group antithermics in three classes,—those which bring down the temperature by acting directly on the nervous system; those which produce this therapeutic effect by diminishing the respiratory power of the blood; lastly, those which have a double action on the nervous system and on the blood-corpuscles. We must make use of medicines from the first of these groups if we would obtain a diminution in the urinary secretion, and at their head I place antipyrin. March 28, 1888, I communicated to the Therapeutic Society the first results which I had obtained in the treatment of diabetes with antipyrin, and I mentioned that, in a patient, I had obtained, with the dose of 2 to 3 grammes (30 to 45 grains) a day, not only a diminution in the quantity of urine, but also that of sugar excreted in the same length of time.*

I had been led to make trial of this medicine because, at a previous meeting, M. Huchard had shown that, in a patient who had been passing thirty litres of urine per diem, antipyrin had reduced that amount to six litres.

At the meeting of April 11, 1888, M. Huchard completed his observation, and cited the case of a patient affected with diabetes in whom the quantity of urine, which had previously been ten litres per day, had fallen to 3 9 litres by the employment of antipyrin.† Since then these facts have been confirmed by many observers, and in particular by G. Sée, A. Robin, etc.

Hence, the antithermic analgesics, and particularly those which are addressed to the cerebro-spinal axis, may diminish the secretion of urine, whether the polyuria be from diabetes mellitus or insipidus. You must not make the mistake to confound the polyuria which accompanies renal insufficiency (interstitial nephritis) with diabetes insipidus. In interstitial nephritis the administration of antipyrin to diminish the renal flow would be rather harmful than beneficial.

Still other medicaments have been counselled in diabetes insipidus. Trousseau vaunted valerian. Recently Bucquoi praised

* Dujardin-Beaumetz, "On Antipyrin in the Treatment of Diabetes" (*Comptes-Rendus de la Société de Thérapeutique*, 1888, p. 46).

† Huchard, "On Antipyrin in Polyuria and Saccharine Diabetes" (*Soc. de Thér.*, 1888, p. 46).

the use of ergot of rye,* which he is in the habit of giving in the dose of 4 grains three times a day, and in the case of a polyuric patient, who was passing fourteen litres a day, it brought down the quantity from two to three litres a day.

Despite the experience of Bucquoi, I persist in thinking that antipyrin gives results quite as advantageous.

Is antipyrin the only one of these analgesics that is capable of giving anuric effects? By no means, for we can also obtain them from phenacetin, acetanilide, and exalgin.

So in patients affected with polyuria, whether it be from diabetes, or whether it be essential polyuria, you should always employ these analgesic medicaments, and you will often obtain remarkable effects; if you make choice of antipyrin, give it in doses amounting to from 2 to 4 grammes a day (30 to 60 grains).

Is it necessary to enforce with great rigorousness the diabetic regimen during long months and years? I do not think so. I believe that if, during the first months, you ought to enforce this regimen with extreme rigorousness, after you shall have observed disappearance of sugar, or even a very considerable diminution, in the quantity excreted in the twenty-four hours, you may relax somewhat the severity of the regimen. I have, in fact, often seen this dietetic regimen produce a great enfeeblement in the diabetic, and in numerous cases it has seemed to me that there was only advantage and no loss in keeping the glycosuria at a figure inferior to ten grammes of sugar in the twenty-four hours, and in allowing the patient with his meals a little bread, a few potatoes, or a little fruit.

Such are the principal points to which I desired to call the attention of my *confrères* in the treatment of diabetes.

In this short exposition I have mentioned only the kinds of treatment which have commended themselves to the profession by their results, leaving on one side those whose merits are still contested. But these considerations seem to me to be sufficient to show what favorable influence hygienic therapeutics, and therapeutics properly so called, may have in ameliorating the condition of those who are suffering from one of the most frequent diseases in our modern life.

In applying the rules which I have above stated, if the patient is willing to submit rigorously to these regulations, there is every probability, unless his diabetes be of the grave kind, that there will be disappearance of sugar from the urine, and that he will escape the baneful consequences that result therefrom; this, at least, can be affirmed of the majority of cases. This, it must be admitted, is a great progress.

To sum up what I have just said, we will suppose a case of diabetes of arthritic origin. You will first prescribe the dietetic regimen which is likely to give the best results, along with the lithiated arsenical treatment.

1. Let the patient take before breakfast and dinner 5 grains of carbonate of lithium in a tumbler of Vichy or Vals water; 2 drops of Fowler's solution should be added to each dose.

2. Give after meals, in a little coffee sweetened with saccharin, 1 gramme (15 grains) of antipyrin.

3. Sponge the body all over every day with warm water containing a little *eau de Cologne*. Energetic dry friction with a hair glove after the sponge-bath.

4. Require the patient to rinse the mouth, after carefully brushing the gums, after meals, with the boracic acid mixture above given.

5. Pursue with rigor the following dietetic treatment: A diet exclusively of eggs, meats of all kinds, fowl, game, mollusks, crustaceans, cheese. All green vegetables are permitted except beets, carrots, and turnips.

Urge the free use of fatty foods, such as sardines in oil, tunny-fish with oil, sour herring with oil, pork, butter, *pâté de foie gras*, "*rillettes*," bacon fat, etc. For soups, recommend principally cabbage soups, bouillon with poached eggs, chicken broth, onion soup, mutton broth, clam broth, etc. All these soups should be taken without bread or crackers.

For bread, allow gluten bread, soja bread, fromentine bread; with each meal allow three ounces of boiled potatoes. To sweeten drinks, use pastilles of saccharin. Tea, coffee, maté, kola are permissible.

Prohibit all amylaceous foods, bread, panada, macaroni, rice, pies and cakes, custards, puddings, sugar, sweetmeats, chocolate, preserves, all fruits.

Milk is forbidden, unless taken in very small quantity. All sauces and gravies containing flour are also forbidden.

For drinks, allow with the meals wine diluted with Vals or Vichy water, but little pure wine, no brandy or other distilled liquors.

6. Regular daily exercise to be taken.

* Bucquoi, "Treatment of Polyuria by Spurred Rye" (*Soc. de Thérapeutique*, 1888, p. 75).

All bodily exercises are favorable. Insist especially on walks in the open air, mountain excursions, fencing, boxing, joinery.

Such, gentlemen, are the bases on which should be established the regimen of diabetic patients, and I come now to a subject quite as interesting,—namely, the new treatment of tuberculosis.

THE OPERATIVE TREATMENT OF STRICTURES OF THE MALE URETHRA.

By John B. Deaver, M.D.,* Philadelphia, Pa.

BEFORE describing the treatment of strictures of the male urethra, I think it well to mention their classification and location.

The usual classification of strictures are as follows:

1. The linear, bridle, pack thread, or valvular.
2. The annular.
3. The irritable.
4. The resilient.
5. The stricture of large calibre.
6. The stricture of small calibre.

Strictures are also spoken of as permeable and impermeable, depending upon the degree of contraction; permeable when an instrument can be passed through the stricture, and impermeable when the stricture will not permit the passage of an instrument, let it be ever so small.

Location.—There has been a great deal of discussion as to the location of strictures of the urethra. Sir Henry Thompson, Treves, and Keys believe that the most frequent seat of stricture (two-thirds) is beneath the subpubic arch or at the bulbo-membranous junction. Dr. Otis claims that the most frequent seat of stricture is about one-quarter of an inch within the meatus urinarius. In my experience the majority of strictures occur about the middle of the pendulous urethra.

The operations for stricture of the male urethra aiming for a radical cure, in my judgment, are gradual dilatation, only practised as a preliminary procedure to dilating internal urethrotomy, external urethrotomy, and a combination of dilating internal urethrotomy and external urethrotomy.

In determining the operative treatment, I first learn the position of the stricture or strictures; and, secondly, their calibre, this being most accurately as well as conveniently accomplished by the urethral metre. All strictures of large calibre, by which I mean those of eighteen millimetres and over in circumference, when situated not deeper than four and a half inches within the meatus urinarius in the average-sized penis, and five inches in the unusually large penis, are cases for dilating internal urethrotomy.

Strictures impermeable to the passage of instruments (filiform bougies, etc.) are cases for external urethrotomy or perineal section, depending upon their location. Strictures of small calibre, which cannot be dilated to eighteen millimetres by gradual dilatation, and situated within four and a half inches of the meatus urinarius in the average-sized penis and five inches in the unusually large penis, are cases for internal urethrotomy, first using Maisonneuve's urethrotome, with which the stricture or strictures are cut to twenty millimetres, when, with the dilating urethrotome, the calibre of the urethra is easily restored.

Gradual dilatation, by means of conical steel bougies, is the form of treatment most commonly employed by the great majority of surgeons, and for what reason I know not, but hope it is because their patients will not submit to more radical measures, urethrotomy, which beyond any question of doubt, offers the only means of cure. It is true that gradual dilatation will temporarily relieve a stricture, but where is there a surgeon who would promise a cure by this treatment? Except, perhaps, I will venture to say, in very recent strictures, as before organization has taken place: but these are so seldom seen before this process is complete, not having been the occasion of sufficient trouble to prompt the patient to seek the advice of a surgeon; therefore they can practically be dismissed. With this form of treatment, the bougie becomes the patient's constant companion, not for a short time, but for life. How common it is for the patient to be prescribed a bougie, and with one or two lessons taught how to use it, and is advised to pass it himself once every week, or perhaps every other week; this, to say nothing of the ill effect accruing from this treatment, is quite enough to condemn it. Many of us have seen epididymitis, cystitis, abscess of the prostate, and prostatorrhœa, resulting from the passage of the bougie, both in the hands of the surgeon and of the patient. None of these troubles have I ever seen follow an internal or external urethrotomy properly done

* Demonstrator of Anatomy and Lecturer upon Surgical Anatomy, University of Pennsylvania; Attending Surgeon to the German, Philadelphia, St. Agnes's, and St. Mary's Hospitals.

We will admit that in nearly all cases of stricture treated by gradual dilatation, whether the stricture be in the pendulous urethra or further back, the bougie is passed into the bladder; in fact, the instrument is forced into the urethra up to its hilt by depressing the handle well between the thighs, and is not spoken of as dangerous treatment when compared with urethrotomy. The mediate danger of this manner of treatment I am very certain is of considerable moment, while that of urethrotomy is *nil*.

There is no doubt that with a very small conical steel sound, unless the greatest care be observed when attempting to traverse a tight stricture, there is danger of making a false passage, this being more likely to occur when the stricture is located in the pendulous than in the deep urethra. To some this may seem an adverse statement, but when we recall the fact that the surgeon has better command of the deep than of the pendulous urethra, owing to the relation it bears to the anterior wall of the rectum, with the index-finger, in which (for practical purposes answering the part of a director) it can be positively determined whether or not the sound is following the proper course, it will be readily understood. I am always able to accomplish more with the conical steel sound than with the soft bougie. If from the history and examination of a case like the above I suspect there is a false passage, I make a urethroscopic examination, when, with a probe, I am able to determine positively. It may be very difficult to find the orifice of the false passage, owing to the presence of blood; this can be overcome by swabbing the urethra with styptic cotton.

Continuous dilatation, where a filiform bougie or a small catheter, if the stricture will admit it, is introduced into the bladder, and allowed to remain for some time, generally two or three days, when these are replaced by others of larger size, and so on till the stricture can be disposed of according to the operator's preference,—this treatment is always followed by a strong tendency to re-contraction, to say nothing of its provoking suppuration and often ulceration of the walls of the urethra; certainly three strong objections. In the case of a tight stricture of the deep urethra (causing retention of urine) in a subject well advanced in years, and having every appearance of bladder- and kidney-disease, I have seen the urethra loaded with filiform bougies, and, after persevering for some time, the surgeon has succeeded in passing one through the stricture, allowing it to remain, congratulating himself upon the feat performed, this offering sufficient relief to the distended bladder till the stricture can be dilated to admit the smallest-sized catheter. By this treatment it is a question how long it will be before the bladder is completely emptied, to say nothing of the evil effects of the prolonged retention. These are cases in which I always practise and teach that external urethrotomy should be done, thus fulfilling every indication,—that of relieving the retention, dividing the stricture, and draining the bladder, all of which are urgently called for, but especially so, in the event of existing organic trouble, beyond the urethra.

The treatment by rapid dilatation and divulsion I do not approve of, as by either means we must necessarily occasion a lacerated wound, the latter being much less safe than an incised wound, like that made in the operation of internal urethrotomy. In operations upon the surface of the body, we are careful to have our cutting instruments in such condition as not to do faulty work, knowing how union is interfered with when the edges of the wound are in any way contused or lacerated. Why, then, should we adopt an opposite course when doing a plastic operation, as it were, upon the urethra, to say nothing of opening up more than one channel by which the urine may find its way by infiltration, thus exposing the patient to unwarrantable risk? For one who still believes the above means of treating strictures of the urethra are preferable, safer, and therefore more surgical than by internal urethrotomy, to convince him he is wrong, I would ask him that he make a urethroscopic examination, with the incandescent lamp urethroscope (Leiter), of the portion of the urethra operated upon, when I am confident that this alone would forever disabuse his mind of the fallacy he has been laboring under, if not instilling into the minds of hundreds of medical students, to say nothing of the sequelæ of the divulsion treatment. In a paper on the "Value of the Leiter Incandescent Lamp Urethroscope in the Treatment and Diagnosis of Chronic Urethral Discharges," I had the honor of reading before the surgical section of the American Medical Association, at Nashville, Tenn., May, 1890, and published in the *Philadelphia Medical News* of June 21, 1890, I called attention to the disadvantage of this proceeding, illustrating my remarks by diagrams, which showed tabs of the torn

urethra. The only circumstances under which I practise rapid dilatation or divulsion, but never carried to the extent of restoring the urethra at the seat of the stricture to its normal calibre, are when called to see a patient with a stricture, simple or multiple, of small calibre, seated in either pendulous or deep urethra, causing retention of urine, and when a cutting operation is positively refused. Here I introduce the small-sized Thomson divulsor, if the stricture or strictures will admit it, and stretch it to thirty millimetres. Not being able to engage a divulsor at once, I introduce a filiform bougie, and over this pass the divulsor. Immediately after the divulsion, a No. 20 soft catheter rendered aseptic is passed into the bladder, and retained for forty-eight hours. The bladder is washed out through the retained catheter with either boracic-acid solution or a solution of bichloride of mercury, 1 to 15,000, two or three times a day, depending upon the amount of cystitis present. The retention of a catheter in cases like the above I consider imperative. The treatment by internal urethrotomy is carried out in the following manner: The preparatory treatment consists in an examination of the urine, both chemically and microscopically, when, if the case be a suitable one for operation, the internal administration of boracic acid, 10 grains, is given four times daily; attention to the bowels, a laxative being given, if necessary; irrigation of the urethra with a 1 to 15,000 solution of bichloride of mercury three times daily; this to be instituted and pursued for four days previous to the operation.

The technique of the operation is described in the report of the cases. The after-treatment consists in the internal administration of boracic acid and two grains of bisulphate of quinine four times daily for three or four days; urethral injections of either boracic acid, grains 5, to 1 ounce of distilled water, or solution of bichloride of mercury, 1 to 15,000, for one week, when, if there is still present some discharge, the urethra is examined urethroscopically, and treatment directed according to the indications. The passage of a bougie of the calibre of the urethra at intervals of four days is continued for four weeks. The complications of internal urethrotomy usually described are hemorrhage, extravasation of urine, urethral fever, spongio-corporitis, and abscess of the prostate. If the rules relative to the distance from the meatus in the division of strictures by internal urethrotomy be closely observed, and the retention of a full-sized aseptic soft rubber catheter in the bladder for twenty-four hours after the operation and the division made with the dilating urethrotome, hemorrhage to any extent should not occur. The superiority of the dilating urethrotome over Civiale's instrument, the one so largely used, and all others of this class, a point which will be referred to later on, is the exactness with which the incision is made, and the depth of the incision required, owing to the strictured tissue being rendered tense (thinned out) by dilating it prior to cutting. By confining the incision to the strictured portion of the urethra, coupled with the introduction of the soft catheter, the likelihood of extravasation is prevented. If the precautions are taken as advised, to secure thorough asepsis, urethral fever will not occur. Curvature of the penis to a slight extent will follow this operation in a small number of cases, I care not how carefully the operation is done. In this connection I can do no better than refer to the second series of cases, numbering one hundred and eighty-six, reported by Professor F. N. Otis, where incurvation of the penis occurred as follows:

Slight, and lasting for a short time only	3
Slight, and lasting for one and a half months	1
Slight, lasting four months	1
Slight, lasting one year	1
Total	6

The treatment that will be found most satisfactory in this complication is massage and the local use of an ointment of mercury and belladonna. By retaining the soft catheter for twenty-four hours following the operation, retention is less liable to occur than if the urine be drawn. Spongio-corporitis I have never had follow the operation, and I believe when it does occur it is the result of faulty antisepsis. By confining the bougie, passed for the purpose of preventing recontraction, to the pendulous urethra, and the observance of strict asepsis, abscess of the prostate gland will not be met with. The advantage of the dilating urethrotome over all instruments for the internal division of strictures of large calibre of the pendulous urethra are the following: 1, the adaptability to accommodate itself to a stricture of the size between twenty and forty millimetres; 2, the exactness with which the stricture can be located and divided; 3, the very small incision necessary for the complete division of the same, being able to render the stricture tense; 4, being able, without any question of doubt, to divide all

strictured bands, the latter qualification particularly not being possessed by any other instrument. The adaptability of the dilating urethrotome to any stricture of the calibre between twenty and forty, holds the same relation to other instruments as does the urethrameter to bulbous bougies,—*i.e.*, that the urethrameter will accomplish what will otherwise require a series of twenty-two bulbous bougies. In addition to being able to locate accurately a stricture in the pendulous urethra of the calibre of eighteen millimetres and above, with the urethrameter, we are able to measure its calibre as well as its length, and by this means determine the length and depth of the incision required to divide it. I would not advise internal urethrotomy in the case of a stricture of large calibre in one the subject of a hemorrhagic diathesis, of advanced kidney-disease, or in one advanced in life. In the case of a stricture of small calibre, where either of the above conditions are present, I do not think it prudent to adopt radical operative means, unless the stricture is the source of much trouble. If the patient is of a bleeding family, I would simply practise gradual dilatation, but otherwise would divide the stricture under cocaine, believing this preferable, under the above circumstances, to the administration of an anæsthetic. Strictures of small calibre in the pendulous urethra that cannot be dilated to admit the Otis urethrotome, but which will admit the filiform bougie of Maisonneuve's urethrotome, can be divided by this instrument, thus allowing the passage of the dilating urethrotome, when it can be disposed of as an ordinary stricture of large calibre. This I find safe, and much more acceptable to the patient than an external urethrotomy. In all strictures of large calibre, whether made such by the preparatory urethrotomy, with Maisonneuve's urethrotome or not, and situated not deeper than four and a half inches from the meatus in the average-sized penis, and five inches in the unusually large penis, I believe dilating internal urethrotomy to be not only the surest and the most speedy way of treating the same, but the only way that will offer the patient a means of permanent cure.

The operation of perineal section and external urethrotomy can be done in one of several ways, the technique of which depending upon the permeability of the stricture to the passage of an instrument. When the stricture will admit, it is the custom with many surgeons to introduce a guide (Gouley, Symes staff, or, if these be too large, a filiform bougie), in this way facilitating the operation. Should this not be feasible, a medium-sized staff or conical steel sound is passed down to the face of the stricture, and the urethra opened by cutting down upon the point of the instrument as the guide. The stricture is then divided from before backward. My method of performing perineal section and external urethrotomy for stricture is without a guide, exposing the urethra behind the stricture by a careful dissection, when it is opened and the stricture divided from behind forward. This is undoubtedly a safer method—there being no question about finding the urethra if we are perfectly familiar with the anatomy of the part operated upon (which I maintain every surgeon should be)—than to cut down, being guided by so small an instrument as a Gouley, Symes staff, or a filiform bougie, engaged, as it is thought, in the stricture, but as likely to be in a false passage. Is not the recognition of the tissues a more reliable guide? Exceptions may be taken to the above when the perineum is extensively infiltrated with urine. I recall a case of traumatic stricture of the membranous urethra following a fracture of the ramus of the ischium, the result of direct force, which I operated upon in the University Hospital two years ago. I am quite sure, if I had not operated in this way I would not have succeeded without at least endangering the life of my patient. This case made a speedy recovery, not having had a bad symptom. The urethra being opened and the stricture divided, a soft catheter is introduced into the bladder through the urethrotomy wound and retained. A drainage-tube, full size, is passed through the urethra to the urethrotomy wound, where it is brought out; this, with the catheter in the bladder, is allowed to remain four days. By means of the catheter and the drainage-tube, both bladder and urethra are kept aseptic by frequent and thorough irrigation of a solution of bichloride of mercury, 1 to 15,000. After the removal of the catheter and the drainage-tube, the treatment consists in passing a conical steel bougie of the calibre of the urethra through the meatus to beyond the stricture every third day till repair is complete.

The terms perineal section and external urethrotomy have distinct meanings, the former referring to a section of the urethra made from without and posterior to the perineoscrotal junction, the latter to a section of the urethra anterior to this point. The only com-

plication of any moment in a perineal section or external urethrotomy is hemorrhage, which, I believe, is less likely to occur when the operation is done by dissection, this enabling the operator to see and tie all bleeding points. In the event that the bleeding continues after the operation is completed and the patient put to bed, it can, in the majority of cases, be controlled by packing. Yet I recall one case where there was internal bleeding (into the pelvis), notwithstanding the above precautions were taken. What is the explanation of blood finding its way into the pelvis? So long as the membranous urethra is not trespassed upon, there is no danger of bleeding taking place into the pelvis, blood being prevented from finding its way there by the attachment of the anterior layer of the triangular ligament (deep perineal fascia.) When the space between the anterior and the posterior layer of the triangular ligament is opened up, as must of necessity be done when dividing a stricture of the membranous urethra, a communication is established between the muscles (levator ani coccygeus and pyriformis), forming the floor of the pelvis and the pelvic fascia, which latter is continuous with the posterior layer of the triangular ligament (deep perineal fascia). The case above referred to was one of stricture of the bulbo-membranous junction, for which I did a perineal section some years since, and where hemorrhage took place into the pelvis, forming a blood clot most pronounced in front of the bladder; the clot underwent suppuration, causing septicæmia, from which the patient did not recover for three months.

CASE I.—*Internal Urethrotomy.*—J. H., white, aged 32, was admitted to the male venereal wards of the Philadelphia Hospital, complaining of difficult micturition. Gave a history of several attacks of gonorrhœa. The stream of urine passed was small, and there was a gleety discharge. Examination of urine was negative. A No. 20 F. conical steel bougie could be passed with some difficulty, occasioning patient considerable pain.

Examination of the urethra with the urethrameter showed its calibre to be forty millimetres, calibre of the meatus twenty-eight millimetres, and the presence of three strictures, respectively, three-quarters, two and a half, and three inches posterior to the meatus. The patient giving his consent to an operation, 10 grains of boric acid t. d. was given internally for five days previous to the operation. On October 4, 1889, he was brought before the clinic, and 10 grains of quinine were administered; was anæsthetized, ether being used. The first procedure was the restoration of the meatus to the calibre of forty millimetres. Having located the anterior stricture, I then passed the Otis dilating urethrotome, so as to engage it, and dilated it until it met with resistance. The concealed blade was then drawn through the stricture. After division, was able to expand the blade up to forty millimetres, the normal calibre of the urethra. This procedure was repeated with each of the remaining strictures in turn. Having divided these, I then introduced the urethrameter down to the bulbo-membranous junction, when it was expanded to forty millimetres, and then easily withdrawn, all obstructive points having been divided. The urethra was washed out with a 1 to 15,000 solution of bichloride, a soft catheter introduced into the bladder, which was allowed to remain for twenty-four hours. Before removal from the operating-table a one-grain opium suppository was introduced. His recovery was uninterrupted, the temperature at no time reaching 99°. A No. 40 F. bougie was passed every fourth day for four weeks, when, there being no longer any discharge, the patient was discharged cured.

CASE II.—*Internal Urethrotomy.*—S. S., transferred from the nervous to the surgical wards of the Philadelphia Hospital on September 16, 1889, with the diagnosis of stricture. Had gonorrhœa fifteen years ago. For the last three years noticed his stream decreasing in size. When admitted to the nervous ward a No. 15 F. bougie could with difficulty be passed. When referred to the surgical ward his urethra was gradually dilated, until a No. 21 F. bougie could be introduced.

Measurements.—Circumference of penis, three and three-quarter inches; calibre of urethra, thirty-five millimetres; of meatus, twenty-three millimetres; of stricture, twenty-one millimetres; depth, three inches from the meatus.

He was prepared by the routine administration of boric acid internally, 10 grains t. d. Previous to the operation 10 grains of quinine sulph. and ½ grain of morphine sulph. were given.

Operation, September 25.—Stricture cut as in Case I. Temperature before operation, 99⅘° F.; after operation, evening, 98⅘° F.

The night following the operation the patient removed the catheter; his temperature rose to 101⅘°; catheter was reintroduced under antiseptic precautions; quinine was

administered. After this his temperature dropped to 101, and on the morning of September 26 was 98¾°. On the evening of the 26th the catheter was again removed by the patient, his temperature rising to 101⅘°; was treated as on former occasions. After this no difficulty was experienced. One month after the operation a No. 36 F. bougie could be passed with perfect ease.

CASE III.—*Internal Urethrotomy.*—S. T., white, aged 47, a hemiplegic, was transferred from nervous to surgical ward of the Philadelphia Hospital for urethral treatment. The examination revealed as follows: Circumference of penis, three and a half inches; calibre of urethra, thirty-four millimetres; of meatus, thirty millimetres. One stricture was found three inches from the meatus. The patient had some difficulty in urinating, but not a great deal; complained chiefly of reflex symptoms, which were thought to be due to the condition of the urethra. The patient having been prepared as in Case I., and the stricture and meatus divided in the same manner, a No. 34 F. sound was passed through the stricture without any difficulty. A catheter was passed into the bladder and secured. An opium suppository introduced into the rectum and patient returned to bed. Same after-treatment given as in the two previous cases. Four weeks after the operation recovery complete.

CASE IV.—*Interno-External Urethrotomy.*—J. W., aged 42, white, was admitted into the venereal ward of the Philadelphia Hospital suffering from periodical attacks of retention of urine, with a history of having had several attacks of gonorrhœa and a stricture. Had external urethrotomy performed some time since; the wound was entirely healed at time of entrance into the hospital. On examining the case, a cicatrix was found in the perineum, corresponding to the site of the former operation.

Measurements.—Circumference of penis, three and a half inches. Examination by the urethrameter gave a urethral calibre of thirty-three millimetres; meatus, twenty-eight millimetres; and the presence of two strictures in the pendulous urethra, situated two and a quarter and four inches posterior to the meatus, of the calibre of twenty-eight and twenty-six millimetres, respectively. The calibre of the stricture in the deep urethra was not measured.

I explained the condition of affairs to the patient, and advised radical treatment, to which he gave his consent. An examination of the urine was negative. Boric acid was given internally for four days previous to the operation. The patient received 10 grains of quinine sulph. prior to the administration of ether. The strictures in the pendulous urethra was disposed of as in Cases I., II., III. I then divided the stricture in the deep urethra by perineal section. The incision began at the junction of the scrotum and perineum, and was continued backward about two inches, taking as my guide the perineal raphe, going through the cicatricial tissue resulting from the former operation. I found the landmarks in this case entirely obliterated; the perineum was infiltrated by the products of inflammation. Cutting through the cicatricial tissue, being careful not to deviate from the median line, I readily exposed the urethra behind the stricture, which was opened and the stricture divided. An ordinary aseptic drainage-tube was passed through the pendulous urethra, and brought out at the perineal wound. A catheter was introduced into the bladder from the perineal wound, and held in position by a suture; the pendulous urethra and bladder were flushed with a 1 to 15,000 bichloride solution; the free ends of the drainage-tube were fastened together with a safety-pin. Iodoform was freely used in the perineal wound, which was then packed with iodoform gauze, an opium suppository introduced into the rectum, and an antiseptic dressing applied. Patient returned to bed. The packing was allowed to remain for three days; when removed, the wound was free from pus and aseptic, the urethra and bladder were irrigated, and the drainage-tube and catheter removed; a No. 33 F. bougie was passed. This was repeated every third day until the wound in the perineum was entirely healed, which required six weeks, the drainage-tube and catheter only remaining in three days. Patient left the institution cured.

CASE V.—*External Urethrotomy.*—W. J., aged 17, white, was admitted to the surgical ward of the Philadelphia Hospital suffering from retention of urine. Gave a history of having fallen astride a rail when thirteen years of age. On entrance to the hospital an attempt to pass a catheter by my resident failed. Neither was he able to pass a filiform bougie. Failing myself to pass an instrument, I had the patient etherized. Under the influence of the anæsthetic I succeeded in passing a No. 12 conical steel bougie, French scale. As the patient desired permanent relief, and the stricture (traumatic)

was situated in the deep urethra, I performed perineal section. An incision, beginning at the junction of the scrotum with the perineum, was carried back in the median line or the perineal raphe for two and a half inches, when, by a careful dissection through the deep structures, the urethra, which was infiltrated to a considerable extent with inflammatory material, was exposed. A small opening was now made in the urethra, through which a grooved director was passed into the bladder, from which passed a large amount of urine. The opening in the urethra was extended anteriorly through the stricture. A sound, No. 40 F., could now be passed through the urethra and into the bladder. From the perineal wound a catheter was passed into the bladder, which was held in place by a suture; a drainage-tube passed through the urethra; the wound thoroughly irrigated, dusted with iodoform, and packed with iodoform gauze; a suppository of 10 grains of quinine and 1 grain of opium was introduced into the rectum, the wound dressed antiseptically, and the patient placed in bed. The dressing was allowed to remain for four days, when the packing with the catheter was removed, and both wound and bladder thoroughly irrigated with a solution of boric acid. A sound, No. 40 F., was passed with the same ease as at the time of the operation. The wound was again lightly packed and dressed antiseptically. The patient was dressed every three days, and a No. 40 F. bougie passed at the time of the dressing. Five weeks and three days after the operation the wound in the perineum had entirely healed. There was no difficulty experienced in passing a 40 F. bougie. The patient was discharged cured.

SOME OBSERVATIONS UPON THE GASTRO-INTESTINAL DISORDERS AND THE DIET IN PULMONARY PHTHISIS.

By Karl von Ruck, B.S., M.D.,* Asheville, N. C.

IN the therapeutics of pulmonary phthisis no class of intercurrent affections is of greater significance to success or otherwise, and none require so frequent attention, as do those which I propose to consider in this paper. The problem of their prevention or removal is never to be ignored, and without the greatest vigilance these complications are almost sure to arise sooner or later, sometimes as most formidable obstacles to improvement, and not infrequently as a determining cause for a fatal result.

In many cases obstinate disturbances of the digestive organs precede, or seem to precede, the actual development of the lung-affection by considerable periods, possibly idiopathic in their nature, but more likely as symptomatic expression of the incipient disease, for the time beyond our diagnostic resources.

Although believing that any long continued gastro-intestinal derangement may, by reason of interference with general nutrition, under favorable circumstances, become a predisposing factor to tubercular infection, I cannot ignore the fact that, in the majority of what may be called idiopathic cases, even when continuing for years and leading in time to severe constitutional impairment and cachexia, tuberculosis does not follow; and I incline more and more to the belief that the cases of so-called pretubercular dyspepsia or pretubercular constitutional decline are symptomatic of incipient disease, as a rule due to infection of the alimentary canal.

The increasing evidence of the unsuspected consumption of tubercular food products, derived from infected and, perhaps, still apparently healthy animals, and the liability to infection of the intestinal tract from tubercular secretion, through the various mediums of common use, such as eating-utensils, napkins, glasses, common drinking-cups in public places, dental instruments (tubercular patients are frequent visitors of dental offices), etc., leaves little doubt that tubercle bacilli find entrance to the digestive organs very frequently; and adding to this the fact that it is impossible to positively diagnosticate the earlier changes resulting from tubercular localization upon the intestinal mucous membrane, or in the mesentery, lymphatic channels, and absorbent vessels, I believe that primary infection of the alimentary canal is perhaps not so infrequent as has heretofore been held.

I believe this the more, since, upon closer study, I find that the development, symptoms, course, final outcome, and reaction to usual modes of treatment are apparently different from others, and perhaps peculiar to these cases; and, although I have but a limited number of recorded cases, observed in a more critical light, and with strong suspicion

* Director of the Winyah Sanitarium for Diseases of the Lungs and Throat; Member of the American Climatological Association, American Medical Association, etc.

of their peculiar features and origin, my records of previous cases with termination in phthisis, together with my memory, confirm me in my conclusions.

In the majority of my cases, all from private practice, the records show that the digestive disturbances had their beginning in what was claimed to have been "the midst of good health,"—at any rate, without having previously suffered of dyspepsia. They were all young subjects, sometimes with and at other times without direct hereditary predisposition. Both subjective and objective symptoms on the part of the digestive organs were entirely out of proportion to the constitutional decline, which was manifest in rapidly-resulting profound anæmia, great loss of strength and flesh, occasional and irregular slight elevation of temperature, and the ineffectiveness of all management, diet, and medication was most constant; yet anorexia, vague and undefined distress in stomach and bowels after eating, constipation, sometimes alternating with diarrhœa, meteorism, seldom nausea, were all that the patients complained of directly. The tongue was seldom coated, physical examination of the digestive organs negative, and in several cases the beginning of some acute illness, like typhoid fever, was noted as being suspected on first consultation.

In all but the three last cases all sorts of treatment, directed to the digestive organs and the general decline, were adopted, and the changes from one plan to another seemed characteristic in their failure to give relief. Pepsins, maltine, arsenic, stimulants, bismuth, acids, alkalies, castor oil, mercurials, salines and other laxatives, iron and bitter tonics, elixirs and wines of this and of that, liquid foods, solid foods, beef peptones and other artifices, meat juices, milk diet, beef diet, and no diet, mineral waters, rectal feeding, oxygen-inhalations, exercise, rest, all to no purpose, seldom a little better, frequently growing worse, or no improvement, are the notes appended to these cases; examinations are recorded of the lungs, the heart, the liver, the spleen, the stomach and bowels, the pelvic organs, the nose and throat, the urine, the fæces, as a rule with negative results. If anything had been thought to have been found, like some affection of the throat, uterine displacement, leucorrhœa, or a hemorrhoid, its treatment had no influence. The only constant finding was the increasing anæmia and diminution in number of red blood-corpuscles, and its treatment was unsuccessful. The outcome was in the course of some six months, seldom later, a pulmonary phthisis, once tubercular peritonitis, and the last three cases recovered.

Well-pronounced gastric catarrh was not present, at least not in the beginning, but resulted several times from heroic medication, nor was there evidence of lack or perversion of the gastric secretions. I frequently tested the contents of the stomach by Ewald's method without obtaining any clue, the washing of the fasting stomach only occasionally showed a few remains of food or a little mucus.

It is certainly not the rule that such apparently non-organic disease of the digestive organs proves so thoroughly obstinate, or that in such obstinate cases we cannot find more tangible evidence; indeed, after having had a few of such cases, I knew what was eventually coming, after having been so completely baffled and outwitted, and I never was mistaken.

The three last cases treated, and which apparently escaped their fate, did not, however, do so by mere chance and accident. The usual means employed had been equally ineffectual, and considerable inroads upon their health had already occurred, when, under the suspicion of beginning phthisis, I adopted what may be called superalimentation, and, to give them a full chance, I also administered creosote in the first two cases for a considerable period, and in increasing doses to 24 minims per day.

I feel, however, inclined to give the credit to the forced diet, as the improvement set in earlier than could be expected from any specific medication in the period of small doses, and because the last case recovered under the diet alone.

In the diet of these cases all artificial foods were excluded, and preference given to a plain, simple, mixed diet, in which the hydrocarbons were considerably in excess of the physiological standard, consisting of milk, eggs, butter, bread, rice, boiled cereals, sugar, fruit, and beef (the latter only once a day). The patients were urged to take as much as possible, despite the existing anorexia, or the complaint of fulness, meteorism, etc., but frequently recourse had to be had to feeding with the tube, especially in one case, which absolutely refused to take a sufficient amount of food, for the first few weeks of such management. The stomach was washed out in all cases once a day in the beginning, and less frequently thereafter, until substantial gain was made, and less discomfort was noted after eating. Large quantities of food were thus given—for in-

stance, from two to three quarts of milk, the yolks of four to eight eggs, three large saucers of rice, oatmeal, imperial granum, or cracked wheat, with milk and sugar, a number of slices of bread and butter, about six ounces of scraped beef, occasionally some boiled ham, frequently three or four large baked potatoes with plenty of butter—in the course of twenty-four hours. We, of course, had to begin with smaller quantities, but the amounts above indicated were reached, and sometimes exceeded, in the course of two or three weeks, and kept up thereafter with as much variation as was possible to suit the inclinations of the patient.

The bed was kept absolutely for the first month, and massage substituted for exercise.

When the tube was used for feeding, milk, yolks of eggs, sugar, sometimes gruels of cereals, and scraped beef were chiefly depended upon.

In each case the cure was completed within three months, and appetite and relish for food was noted, especially after the anæmia had partially subsided and the patient had made material gain in flesh, and was allowed to be up. During the latter part of the management the patients were allowed to eat in amount according to their inclination, having reached their normal weight. In two of the cases well marked phthisical family history existed. All three patients are well and free from lung symptoms at the present time, after fifteen, eighteen, and thirty months, respectively, since having been discharged.

It is, of course, beyond demonstration that these cases would have subsequently shown manifest tuberculosis had they been managed otherwise, or that their symptoms and decline would not have been arrested by other means, or would not have improved in the end, and such objections may be urged in any case, tending to follow an unfavorable course, when, by some means or other, disaster is averted. I can only say that they seemed to present the same symptomatology and course, and the same obstinacy to all usual methods of treatment, as did the preceding cases which ended in phthisis.

In my present field of labor I see little of incipient tuberculosis, and my opportunities for further investigations are therefore limited, and I call attention to my past experience, particularly in the hope that others may take up the matter in order to determine if the cases described and their peculiar features are not really due to incipient disease, due to tubercular infection of the alimentary canal.

In now speaking of the gastro-intestinal disturbances as they occur in the course of the established pulmonary phthisis, I propose to confine myself to those of the stomach and bowel, which are still, at least in a degree, amenable to our therapeutic resources; and, although recognizing the importance of disturbances in any of the organs lying within the portal circulation, to limit my paper I shall refer to them only incidentally.

I have already stated, in the beginning of this paper, that success in the treatment of phthisis depends, other things being equal, upon the integrity of the organs of digestion and assimilation, and when these are hopelessly diseased, as from glandular atrophy and inveterate catarrh, amyloid degenerations, fatty or tubercular liver, extensive tubercular processes of the intestine, and infiltration and plugging of the lymphatic channels, mesenteric glands, etc., nutrition becomes impossible, and the case must end fatally on account of such complications alone.

One of the most frequent causes of temporary loss of appetite in the course of phthisis is fever; and, apart from its proper management, much circumspection in diet of such fevering patients is essential to prevent rapid loss of flesh on one side and the ill consequences of acute indigestion on the other. Occasionally it happens that fever patients eat heartily, but in these also the digestive organs will finally fail if their diet is not properly regulated. Milk, with the well cooked and thoroughly-boiled grains, bread and butter, soups and gruels, occasionally a soft-boiled or raw beaten egg, and, according to the state of the bowels, with the addition of stewed fruits, should be chosen from for periods when the temperature is rising or at its maximum; and heartier meals should be given only after well-marked decline of fever and during the afebrile hours of the day. During fever it is best to feed little and often, as an overloaded stomach or large quantities of nitrogenous food are almost sure to increase and maintain a higher temperature for at least several hours after meals. Sooner or later such errors in diet will lead to uneasiness, meteorism, and diarrhœa, with or without colicky pains, with consequent rapid loss in flesh and strength. Under close observance of the above rules I have in many of my cases been so fortunate as not only to prevent serious loss, but also to maintain

eight, or even to increase it, during protracted fever.

Another cause of digestive disturbances lies in physical and mental overexertion. Whatever amount of exercise may be permissible, there should always precede and follow a sufficient amount of rest for each principal meal. Such rest need not confine the patient to the house or room, especially in a favorable climate. Under no circumstances, however, should a patient eat heartily when fatigued. In a recent paper on the detrimental effects of overexertion in pulmonary phthisis, presented by myself to the American Climatological Association at the session in Denver, Col., I have shown the frequent loss of appetite and subsequent nutritive disturbances as the results of overexertion observed by me, and have no doubt that other physicians have had similar experience.

In this connection I desire to warn, especially female patients, of tiresome toilet-preparations for meals or for their appearance in the public rooms of fashionable hotels at health resorts. Such hotels are for this and many other reasons unsuitable for residence of patients who seek recovery from pulmonary disease.

The returning appetite, after subsidence of acute processes and complications, and when, under favorable circumstances, real and continuous improvement would follow and perhaps continue; and also the increased desire for food, so frequently seen in patients immediately upon their arrival at elevated climatic resorts, often become a snare, and lead to gastro-intestinal complications, and indirectly to relapses of acute processes, when the digestive powers are not equal to the tax imposed by patients reduced in general health, but who are delighted to experience again a desire for food.

Unless, under such circumstances, the quantity and quality of food taken is promptly regulated for each individual case, and an increase allowed but slowly, there is nothing surer than a loss of all the gain that has been made, and often of much more, during the time the digestive organs were tolerant of such abuse. But few patients realize the need of circumspection, or are able to govern themselves sufficiently, when, after long indifference to food, they again realize a keen relish, and often their desire to gain rapidly in flesh and strength gets the better of their judgment, even when the danger has been pointed out to them.

In improving patients who have but little or no fever and are eating well I have often observed the tendency to treat themselves to favorite dishes or to eat immoderately of them. These patients must be made to understand that they eat for health, and that they cannot afford to trifle with their digestive organs. I well remember a patient who was doing very well indeed, and who acquired a serious gastro-intestinal catarrh from "candy and peanuts," from which she did not recover for nearly a month, during which active lung symptoms with subsequent destructive changes also occurred, and led to a fatal issue. I can see no reason why this patient should not have continued in her improvement had the treat of candy and nuts been avoided. In another case, with similar results, it was watermelons and sweet cider, and I can give a number of such instances.

The diet in such cases should always be simple, and as long as increase in flesh is desired, the hydrocarbons should predominate. After the patient has reached his natural weight, and when more active physical exercise is allowable, the nitrogenous foods should be given to the full physiological standard. In no case which is steadily gaining is it essential, or even best, to select such foods which are believed to require the shortest time for digestion, and predigested and artificial foods at such periods are positively harmful.

The food, as exercise is increased, must have some "staying quality," and need not, so to speak, melt in the mouth. Sirloin and round steaks are then preferable to tenderloins and sweetbreads, and good roast beef to delicate birds and spring chicken. Ham and eggs are well borne; indeed, boiled ham I have found to have been well digested when I found as regularly in the washings of the stomach the undigested particles of quail.

Artificial food products, even if they contain all the elements which their labels claim, and are ready to enter the circulation at once when reaching the stomach and bowel, as is said of most of them, can only be of use when the digestion of other food has been found impossible; then they should be given in very small quantities, and every fifteen or twenty minutes, to derive the best results. It would certainly be unwise and wasteful to at once flood the circulation with larger quantities of food products than can be oxidized and assimilated; and, when nature made the digestion and absorption gradual, and extending to from one to

six hours, she meant continuous nutrition and appropriation rather than a momentary flooding, so to speak, which would fall short of oxidation, and simply prove an additional tax in their elimination.

When food is given, the digestion and absorption of which requires but little time, it must be given in smaller quantities, relatively oftener; and a mixed diet for patients free from fever, who take three regular meals, should be so chosen that, besides the readily-digested articles, there should be also those which require a longer time for digestion, so that the absorption be not excessive at one period and "nothing" for a number of hours before the next meal, but equal and continuous for all the hours to shortly before the next meal, allowing physiological rest for a portion of the night-time. The consumption of large quantities of fluids with meals should always be avoided, especially by patients who eat well of solid foods; it is positively injurious for them to drink from two to six glasses of iced milk, and then eat a regular and hearty meal in addition. I prefer, however, one glass of milk to a glass of water, if only a moderate meal is taken, and recommend to drink frequently of water between meals.

These details are of great importance, if we desire the best results in nutrition, and I believe that I succeed best by observing them. At any rate, it is a rare thing for my patients not to gain steadily and surely in flesh and strength under such management, and the exceptions occur only during active disease and complications, and when in the arrested disease the respiratory surfaces have been so diminished by fibroid and cicatricial changes that the respiratory capacity is far below par. In such patients the quantities of blood and amount of flesh accommodate themselves to the powers of oxidation; with increasing shrinking, they lose in flesh in proportion as the vital capacity is diminished, and this in the absence of all fever and other complications, in the presence of a good appetite and no matter how much food we may give. The excess of food taken is then shown by two or three large evacuations per day, and by the appearance in the urine of evidence of imperfect or partial oxidation.

If we succeed by the use of the pneumatic cabinet to increase the vital capacity, or, by the administration of oxygen in the form of inhalations, oxygen bath, oxygenated water, or rectal oxygen enemas, to temporarily augment the quantity of the blood, we see a corresponding increase in body weight; the former treatment being preferable, as it removes the cause, but the oxygen may be used in conjunction, with the hope to prevent further loss, until the effects from the pneumatic treatment are obtained.

A most prolific source of indigestion, first temporary and finally leading to gastric catarrh, is the indiscriminate use of alcoholic stimulants. In the management of phthisis these must always be looked upon as medicaments, and require for their administration the existence of a definite indication, when the dosage needs to be directed by the physician, and the quality and time of administration chosen, the same as is the case with other drugs. It is simply absurd to tell a patient to take all the whiskey he can. I have known cases who, under such advice, succeeded in taking a quart a day, and much to their detriment. That occasionally a case improves while taking whiskey is quite to be expected, and more still would it be benefited if the administration of it would be reserved for time of need, and the amount given governed by the effect upon the circulation and digestion.

Gastric catarrh never improves as long as large doses of strong alcoholics are given; on the contrary, it grows worse, and I have made it a rule never to make use of whiskey or brandy in such cases. Their withdrawal is often all that is necessary for improvement. If stimulants seem indicated, rest and ingestion of more food soon obviate their need, and only in extreme cases, in the partial collapse with subnormal temperatures, do I give them, and then per rectum when severe gastric catarrh is present.

To aid the digestive organs, and perhaps oftener to comply with the wishes of patients who have been accustomed to wine or beer with their principal meal, I allow a glass of red Hungarian or light Rhine wine, and, really, I have seen patients who seemed to eat and digest better with the wine than without it. When wine or beer is taken with a meal, it must be to the exclusion of other fluids, including milk and coffee.

Chronic gastric catarrh, as such, requires most painstaking management of diet, and frequent washings through the tube to get any improvement. Rest of the digestive organs, by greatly limiting or temporarily withdrawing food, is not to be thought of in phthisis, and I have never succeeded that way in any case. On the contrary, the amount of food must, as a rule, be increased, even under the protest of patients, and fermenta-

tion prevented by regularly washing away the mucus and the remains of the previous meal shortly before the one or two heartiest meals in the day. The foods must be simple, the hydrocarbons in excess, and the patient kept in bed, substituting massage for exercise.

In cases where I found no free hydrochloric acid in the stomach contents one or two hours after trial meals, I have seen much benefit from its regular administration in small doses every fifteen or twenty minutes for several hours after eating, and under its use, together with frequent washings, and in some very obstinate cases, I have finally succeeded in much improving the anæmia and nutrition, with re-establishment of the natural secretion. It was seldom, however, that I obtained a real cure of gastric catarrh, and when it occurred the cases were not severe or old ones. The results of treatment were, however, for the time being, satisfactory, as I obtained increase in flesh and strength, and a great amelioration in the gastric symptoms in all cases. What a continuance of such treatment might accomplish, if kept up for long periods, I cannot say. I have never had a patient willing to submit to washings any longer than was needful for material improvement; and they preferred to rest then, to resume upon the return of old symptoms, which was often necessary.

Of the so-called symptomatic (reflex) indigestion in phthisis, I see less and less the more I take pains to thoroughly investigate my cases, in most of which I find the causes of the apparent reflex gastric disturbances to be really due to errors in diet, overexertion, existing anæmia, the state of circulation, abuse of alcohol, more or less severe gastric catarrh, sometimes accompanied by dilatation and ectasia of the pyloric or cardiac orifices.

As due to reflex irritation I have looked upon such cases in which there was hyperacidity and markedly increased motility, and in which any ingested food leaves the stomach in an incredibly short period of time. I have thus seen food taken and passed by the bowels in the course of twenty minutes, and found the stomach empty, but extremely acid after that time. Alkalies are here of no benefit whatever. Opiates give temporary relief by controlling the symptoms sufficiently so that some digestion may take place. In most of my cases the condition improved and subsided gradually, a few times abruptly, but apparently not as the result of treatment.

Digestive disturbances also occur, when considerable areas of the pulmonary circulation are more or less obstructed by reason of inflammatory deposits, fibroid and cicatricial changes, especially in the presence of a weak heart. They are then due to venous stasis and passive hyperæmia in the portal system, and give rise to a variety of symptoms, according to the degree of the inability of the right heart to properly propel its contents and empty itself, and also to the degree of co-existing emaciation. In the earlier stages, when by the wasting an equalization between the total blood quantity and the unobstructed lung surface and heart powers has been arrived at, the symptoms subside again. In more advanced cases absorption becomes seriously impeded, and almost entirely so, by pressure upon the absorbent vessels by the accumulating intestinal gases, which on account of the overfilled portal system are no longer readily absorbed. Aspiration of the gas, through the rectal tube or by puncture, is then our only means to give temporary relief. Gastric and intestinal antiseptics and antifermentatives avail nothing, nor do opiates control the frequent attacks of diarrhœa more than momentarily, and I believe then more by their action upon the heart than by their effect upon the bowel. Rest in the recumbent position, and cardiac stimulants, and the withdrawal of fluids as far as possible, have given me the best results. The diet should be light, dry, and limited in quantity until improvement sets in.

I have seen the above symptoms develop more especially after subsidence of acute processes of extensive character, and the cessation of high fever coincident with occurrence of subnormal temperatures, but also several times abruptly, as the result of physical overexertion upon the heart.

---

*WEAK HEART AND ITS TREATMENT.**

By William A. Hammond, M.D., Washington, D.C.

IN the present paper I design restricting what I have to say to that form of cardiac debility which is due to weakness of the muscular structure and to defective innervation, leaving out of consideration all those varieties which result from valvular disease, from dilatation, or from obstruction to the circulation due to causes existing in parts of the body remote from the organ. The con-

* Read before the New York Neurological Society, December 4, 1888, and now published with additions.

dition to which I refer is one which, in my opinion, is exceedingly common, and which, from vicious modes of life, is constantly becoming more frequent. It is one likewise which always leads to disagreeable consequences, and which not infrequently has a fatal termination, and yet the disorder almost invariably admits of complete relief if its treatment is undertaken in time, and the therapeutic measures are such as physiology and pathology dictate.

It is a well-known fact that the voluntary muscles, if excessively exercised, become larger and stronger than if allowed to remain at comparative rest. Although the heart is not a voluntary muscle, it follows the same law as do those that are under the complete control of the will, and, if originally weak, may be rendered strong with almost as much certainty as attends the development of the biceps, for instance, through the use of Indian clubs, dumb-bells, ball-playing, or other means calculated to bring the muscle into powerful action.

There are medicines also through the administration of which increased tone can be given to the voluntary muscles of the body, and there are likewise medicines the chief and most notable effect of which is manifest upon the heart. Before proceeding to the consideration of the influence of exercise I desire to say a few words in regard to these agents so far as their influence over the action of the heart is concerned.

The article best known in this connection is undoubtedly digitalis, and yet it is one in regard to which there is great difference of opinion among eminent authorities. Without going into the consideration of the various theories relative to the therapeutic action of this drug, I shall, nevertheless, give my own views somewhat at length, based as they are upon no inconsiderable amount of experience.

In the first place, I do not believe in what is called the cumulative effect of digitalis as an event likely to occur from even the long administration of the agent. I do not say that such a result never ensues, but I do say that I have never witnessed it. I have repeatedly seen cases in which unpleasant symptoms resulted when digitalis has been given in cases to which it was not adapted, such as in valvular disease, in which the lesion had been fully compensated by an increase in the strength of the heart. In such cases we may have palpitation, intermitting pulse, headache, vertigo, and difficulty of breathing as effects of digitalis. These phenomena occur after a few doses of the drug have been administered. So far from having a cumulative effect, digitalis, like most other medicines, requires to be given in increasing doses if we desire to obtain the fullest possible benefit from its therapeutic influence. It is, I think, the neglect to follow this plan which frequently leads to disappointment. A dose of 2 drachms of the infusion of digitalis, or one of $\frac{1}{10}$ of a grain of digitalin, does very well to begin with, and to continue for a week or ten days, but after that time it should be increased by about one-fourth, and again similarly augmented at the end of another like period. I am quite sure that I have frequently obtained most happy results from this method of administration, results that would have been much less marked if the dose had remained the same throughout the treatment. Patients whose hearts were so weak that they could not walk twenty steps without suffering from palpitation and greatly impeded respiration, and who were anasarcous as high as the knees, in whom there was no kidney-disease and no organic disorder of the heart, at least nothing ordinarily regarded as organic, have been able to walk indefinitely without suffering, to climb a staircase without dyspnœa, and have gotten rid of their swollen legs, after taking digitalis in the way I have described for two or three weeks. So far as the direct effect upon the heart is concerned, its action has been rendered more regular, its pulsations reduced in number and increased in force, as evidenced both by ordinary examination and by the sphygmograph.

Of all the preparations of digitalis, the infusion made from the fresh leaves is to be preferred. Lately, however, I have employed the "Normal Liquid" of Parke, Davis & Co. with excellent results, and, as it can always be obtained, it is well to know that it is a reliable substitute for the infusion. It can be used hypodermically, which is an advantage over the infusion, when prompt action is required.

I have had considerable experience with convallaria and strophanthus. The first named cannot in any respect be compared to digitalis as a heart tonic. It is uncertain in its action and scarcely deserves to be considered as a medicine capable of giving strength to an enfeebled heart. When it was first introduced, several years ago, I was induced to employ it repeatedly in cases such as those to which I now have reference, with the result that I was invariably disappointed. It does not increase the force of the cardiac

pulsations, nor does it lessen their frequency. I have given the tincture in doses of 30 drops with hardly any perceptible effect. In cases accompanied with anasarca it exercises no appreciable influence in diminishing the exudation. Perhaps it is beneficial in cases of cardiac disease coexistent with kidney lesion, but I have very little knowledge of its power in such instances.

Strophanthus is, however, a far more valuable remedy, though even this agent is not comparable to digitalis. There may be patients who are absolutely intolerant of digitalis (although I must confess to never having seen them), and with these strophanthus might be administered with the confident expectation of obtaining good results. Indeed, it is a fairly good heart tonic, giving tone to this organ, and causing the disappearance of anasarca. But I see no reason for substituting it for the more powerful remedy. It appears to me to bear about the same relation to digitalis that brucine does to strychnine, and when administered with a view to its tonic effect upon the heart, it should be given in much larger doses than those ordinarily prescribed.

I have derived very great benefit in the treatment of weak heart from the administration of strychnine in gradually-increasing doses. I usually begin with a prescription consisting of 1 grain of the sulphate of strychnine to 1 ounce of dilute phosphoric acid, and of this I give the first day 10 drops three times, the next day 11 drops three times, and so on, increasing the doses a drop each day until some indication of the physiological action of the drug is obtained. This usually consists of a slight rigidity of the muscles of the neck or calves of the legs. The administration is then stopped for a day or two, and then resumed as before. This process may be continued as long as appears necessary. I am quite sure that I have frequently succeeded in giving tone to weak hearts when even digitalis has failed to produce permanently beneficial results.

Within the last few years I have made great use of cocaine as a heart tonic. So far as I know the first published account of its efficacy in this direction was made by Dr. Beverley Robinson, of New York, but I had employed it, for the purpose of giving tone to the heart, several years before his observations were made known. Its action in this respect is readily perceived by the stethoscope, the sphygmograph, and by feeling the pulse. Moreover, its influence is markedly shown in the ability which it gives the patient to take increased exercise without suffering from dyspnœa or inordinate cardiac action. I usually begin its administration with a dose of $\frac{1}{6}$ of a grain three times a day, and gradually increase this in the course of a month up to 1 grain. It is well, I think, to give it in combination with wine, although this is by no means necessary. I employ for this purpose the so-called restorative wine of coca, which consists of two grains of the hydrochlorate of cocaine to the pint of Malaga wine. A wineglassful contains one-sixth of a grain of cocaine. After this quantity is taken for two or three days, I have the patient add a powder of one-sixth of a grain to each dose, and so on until the total quantity amounts to a grain. In some cases it is not advisable to increase the dose. Cocaine, more than any other medicine with which I am acquainted, appears to possess the property of exhibiting its effects without an augmentation of the dose, and in such instances the original quantity may be continued indefinitely without deleterious effects. On the contrary, usually with marked beneficial results.

Perhaps it will be proper to say a few words in regard to that form of weak heart which is developed suddenly, as the result generally of exhausting disease of long duration. In such cases there is very little time for deliberation, and none for remedies to act that are administered through the stomach. By inhalation and by hypodermic injection alone can we reach the circulation and act on its central organ with sufficient rapidity. Several years ago I saved the life of an army officer by injecting about a teaspoonful of brandy into the cellular tissue of the forearm. The pulse had disappeared from the wrist, and the heart's action could not be detected by auscultation. Respiration came in those long, deep efforts,—thoracic entirely,—at intervals of fifteen or twenty seconds, and it was evident that in a very short time life would be extinct. But in a less period than it takes me to relate the details of the event, the pulse began to flutter at the wrist, the breathing became more rapid, the face resumed something of its natural hue, and the crisis was for that occasion over. Digitalin was now administered, in the dose of $\frac{1}{60}$ of a grain in like manner; the brandy was repeated in about an hour, and the patient, who was recovering from an attack of diphtheria, lived for several years afterwards.

This is not a single experience, and doubt-

less like events have occurred in the practice of many present.

The nitrite of amyl, administered by inhalation, has several times been effectual in giving at least temporary strength to an enfeebled heart; and on two occasions of profound syncope, when it was impossible to administer it through the air-passages, I have given it by hypodermic injection, with entirely satisfactory results. In these latter cases it appeared to act with as great a degree of rapidity as though inhaled. I gave it in the dose of two drops mixed with thirty minims of glycerin, and it was not necessary to repeat the injection.

Nitroglycerin, trinitrin, or glonoin, as it is euphemistically called, is equally efficacious, and may often, in not very pressing cases, be administered by the mouth, in the dose of $\frac{1}{100}$ grain, gradually increased, if necessary. I have, however, in one instance given it hypodermically, with the effect of instantaneously, as it appeared to me, bringing up to strong action a heart that was apparently in its last throes. This was in the case of a lady who consulted me a few days ago for paralysis of the left arm, following diphtheria. While I was examining the muscles with the faradic current, I saw her face become pale, her pupils dilate, her head fall forward, and, on feeling the wrist, I found the pulsation of the radial artery barely perceptible. I had a one per cent. solution of nitroglycerin on the table within reach, and I at once injected a minim of this into the cellular tissue of the forearm. The effect was instantaneous, and that the lady's life was saved I have no doubt.

Only a week or two ago the son of a prominent physician of Brooklyn, who was convalescent from diphtheria, was found dead on the road on which he was walking, and his death was ascertained to be due to heart-failure. It would be well, I think, that the attention of physicians should be specially called to this tendency to cardiac weakness and thrombosis, to which diphtheria renders its subjects liable, and that the proper precautions should be taken in every case against such accidents as those I have mentioned.

To return to the consideration of that form of cardiac weakness which, for want of a better term, I may call "chronic," all medication, no matter how effective it may be, when first undertaken, cannot be relied on to produce permanently beneficial results. It should be accompanied by the use of physical exercise and by diminishing the amount of the liquid ingesta. By the first named of these the heart is strengthened, by the second the amount of blood is lessened, and consequently the heart is put to less strain to accomplish its work. In many cases these measures are of themselves sufficient to so alter the condition of the central organ as to insure a sound state of health, so far as it is affected by the ability of the heart to perform its office in the body. In others, in which there is a greater degree of adipose accumulation than is consistent with sound health, the diet must be of such a character as to retard the deposit of fat.

In what I shall have to say relative to these therapeutic agents, I, of course, make no claim to originality, being fully aware of what Oertel and others have done in this direction. I am simply giving the results of my own observations.

It is well known that walking or any other bodily exercise increases the heart's action, and that in those in whom this organ is weak fatal results have followed upon excessive physical exertion, especially in persons who have passed the meridian of life, or who are overburdened with adipose tissue. Every now and then we read of instances in the daily press of men and women succumbing after having rapidly ascended a long flight of steps or run after a street railway car. It is exceedingly common for persons apparently in good health to suffer greatly from dyspnœa and palpitation of the heart after muscular exercise of a not severe character. These are people who are not in the habit of taking even moderate physical exercise, and whose hearts have in consequence become weak and incapable of properly performing their functions. So long as they are not called upon to make any severe muscular effort, they get along passably well, but in the various exigencies of life the time is almost certain to come when they will be called upon for some physical exertion to which they are not accustomed. Then it is that the heart suffers to such an extent as not infrequently to cause death.

The heart is like any other muscle. It is intended to accomplish a certain amount of work, and, if it is deprived of this work, it undergoes degeneration. If a person should resolve not to raise the arm for six months, it would be found that the power to raise it would be greatly diminished; and should he persist in not raising it for a few years, he would find it impossible to do so, from the fact that the muscles had undergone degeneration and atrophy. A like process undoubtedly

takes place in the heart when it is deprived of its due amount of exercise. Few persons in my experience are in the habit of giving the organ the amount of work which it ought to have. We have all of us had many patients who could not walk across a room without having the pulsations of the heart nearly doubled in frequency.

As Oertel has pointed out, no means for exercising the body so as to strengthen the heart is comparable to ascending heights. The person subjected to this kind of exercise lifts the body from the ground, and thus does an amount of work equivalent to that of raising a corresponding weight of iron, for instance, with each step that he takes. Besides this, he brings many more muscles into action.

Of course this is a form of exercise that should be used with great discretion in cases of feeble heart, for otherwise we might get such deplorable results as we almost daily see follow upon severe muscular efforts made by those unaccustomed to them. It will not do to tell a man or woman 50 years of age that he must climb a steep hill or ascend briskly several flights of steps. The process must be a gradual one, and should always be undertaken, at least in its beginning, under the supervision of a physician. I have ascertained that we have in the heart itself a very accurate measurer of the extent to which the physical exercise recommended should be practised at any one time. If by the effort the pulsations of the heart are increased more than fifteen beats in a minute, it should not be carried any farther at that time, and it may be persevered with, within, of course, reasonable limits, so long as the pulsations are not increased above that number. For instance, if I find in a patient with a pulse of 80 in a minute that ascending one flight of steps increases the number to 95, I have him stop, sit down, and rest for a few minutes, or until the pulsations have fallen to about the normal number. I then have him resume the exercise, and again count the pulsations. It will generally be found that this time they are not increased 15 beats. If, however, they should show this or a greater increase, I keep on repeating the process, even if it should take an hour or more, till the number of additional beats is considerably less than 15. In cases such as those to which I have reference, it will, according to my experience, invariably be found that one such *séance*—if I may use a word not strictly accurate in the present relation—has produced a decided advance, and that the heart has gained a degree of tone that it will never lose if the system be continued. Of course, to stop after one or a few such experiments could lead to no permanently good results. But the comfort which the patient experiences from this treatment is such that there is no danger of its being interrupted. I have mentioned the staircase as a ready means of enforcing this particular kind of physical exercise, but it will readily be understood that there is nothing special about such an arrangement beyond its general adaptability and the facility with which it can always be obtained. If the patient lives in the country, where hills exist, they will on some accounts be preferable, for they admit of the exercise being taken in the open air, which is often a matter of considerable moment.

In the Sanitarium, which I am conducting in Washington City, a feature in which I take great interest, is what I may call the treadmill, for it is made upon the same principle as that which prevails with the apparatus for punishment or labor with that name. It is so arranged that it can be moved by persons of different weights who may stand on it, and I think it affords very admirable means of applying the principle involved in climbing heights to the treatment of weak hearts. It admits of accurate adjustment to the amount of work which the patient is deemed capable of performing.

It has been contended by some authorities that exercise of the muscles of the upper extremities is more efficacious in giving tone to the heart than when the lower extremities alone are brought into action. I think that there is some truth in this opinion. At any rate it is better that the arms and chest should be exercised in conjuction with the special movements of the lower limbs than that they should be allowed to be passive. Wrestling at arm's length is a very admirable means of exercising the muscles of the upper part of the body. Dumb-bells, Indian clubs, and the lifting of moderately heavy weights are also efficacious measures. It must not, however, be forgotten that in wrestling the desire to be pre-eminent is likely to be a prominent feature, and that this feeling may tempt the contestants to go further than is safe. No such contests should ever be permitted to take place between patients, but should be conducted under the immediate observation of the physician or well-instructed attendant.

Of course in all these cases the general

health must be attended to, and it is well that some one or more of the heart tonics I have mentioned, as well as the measures next to be referred to, should be employed. We would think very poorly of the general who, undertaking to capture a fortification, and having several guns that he could bring to bear on the enemy's works, should persist in firing only one.

Reducing the quantity of liquid habitually imbibed is scarcely of secondary importance to systematic exercise. And as it is generally the case that persons suffering from weak heart are particularly addicted to the excessive drinking of water and other fluids, it is imperatively necessary that the point receive due attention from the physician. Very little, if any, of the liquid taken into the system passes directly out through the intestinal canal. It is first absorbed into the blood by osmosis, where, for the time at least, it adds to the volume of the circulating fluid, and must pass through the heart, to be excreted by the lungs, skin, and the kidneys. Thus the work of the heart is rendered more severe than it should be. It is overtaxed, and suffers in consequence. The effect is very different from that caused by proper physical exercise, for this latter only increases the action of the heart within its normal limits. The matter may, perhaps, be more clearly explained by the consideration of the fact that it would be easier for a man to lift twenty pounds weight five times, in even rapid succession, than it would be for him to lift a hundred pounds once. The former would cause nothing like so much strain to the muscular tissue as would the latter. Now a medium amount of blood corresponds in the necessary action of the heart to move it to moderate exercise frequently repeated, while an excessive amount of blood produces analogous effects to those resulting from an undue muscular effort.

We have in the disease, one of the names of which is exophthalmic goitre, a condition of the heart similar in some respects to the affection now under consideration. Its action is exceedingly frequent, its pulsation feeble, and the most moderate physical exertion, as well as very slgiht mental disturbance, are sufficient to increase the degree of deviation from the normal standard. In two cases of this disease, one of which, I think, came also under the observation of Dr. Satterthwaite, of New York, I reduced the total amount of fluid ingested in twenty-four hours to sixteen ounces. This included everything in the way of liquids—water, milk, coffee, tea, etc.—taken into the system, with the effect of materially increasing the force of the heart's pulsations and lessening their frequency. In both cases the number fell from over 160 per minute to less than 100, and in one of them to less than 90, and this within forty-eight hours after initiating the measure. The ultimate results were that one of these patients was greatly relieved, perhaps cured, —for I have not heard from her for over a year,—while the other entirely recovered in about four months under no other treatment than this, with digitalis and the hydrobromate of hyoscine. This last-named remedy was only used for about a month. Its effects were very decided, but were much more markedly exhibited when the reduction in the quantity of the fluid ingesta was well under way.

Relative to diet and such means as are proper, in addition to those mentioned for lessening the amount of fat deposited, I would strenuously insist upon the eating of as small an amount of the carbohydrates and hydrocarbon as is consistent with good health. Potatoes, rice, and other farinaceous vegetables should be absolutely prohibited. Bread, especially that made from the finer grades of wheat flour, should be almost as rigidly enjoined. I never allow more than two ounces of such bread daily, and this in the form of toast. I require the patient to weigh it accurately on a little letter-balance, which is admirably adapted for the purpose. Buckwheat I find still more admissible, and of this as much as three or four ounces, in the form of griddle-cakes, may be taken daily. Buckwheat, as is probably known to most of those present, may be ingested in considerable quantity without increasing the amount of sugar in the urine of diabetics.

I allow the green vegetables, such as cabbage, cauliflower, Brussels-sprouts, celery, spinach, asparagus, lettuce, etc., *ad libitum*. Tomatoes, egg-plant, apples, cucumbers, and a few other non-saccharine or non-amylaceous vegetables, or which, at least, contain sugar and starch in small proportion, may also be permitted in reasonable amounts.

As to fats and oils, the less taken of them the better. A little butter may be allowed, say half an ounce daily, but beyond this it is not advisable to go with the hydrocarbons. Animal food is best in the form of fish, oysters, crabs, lobsters, eggs, lean beef, mutton, fowls, and game in moderation. It is now well known that highly nitrogenous food,

when taken in excess, is broken up into fat, and is deposited as such in the tissues of the body, especially if at the same time the habit of the individual is sedentary.

Doubtless many cases of cardiac weakness are the direct result of either fatty degeneration of the muscular substance of the heart, or of an excessive deposit of adipose tissue interstitially or on the periphery of the organ. In the one case, the muscular tissue loses part of its normal power; in the other, its action is impeded. I am quite sure that by the method of treatment described the fat begins to disappear from the heart before a like process is initiated in any other part of the body. This is seen from the greater comfort while taking exercise, due directly to the lessening of the dyspnœa, the effect being generally perceived after two or three days have elapsed.

Of course, as the body loses weight, the improvement becomes still more marked, until, in a short time, varying from a week to a month, the patient can run and climb heights and indulge in other violent exertion, which would have been absolutely impossible, without danger to life, during his former condition.

NEW METHODS OF TREATING ERYSIPELAS.

Rosenbach's method consists in washing not only the erysipelatous patch but the entire neighboring surface with soap, and then bathing daily these patches with five per cent. solution of phenic acid dissolved in absolute alcohol. Very brilliant results are claimed to follow this method, both as regards the course of the disease and the febrile phenomena. Even absolute alcohol is said to produce a favorable action.

In Nolte's method the entire affected surface and surrounding zone is painted twice daily with a mucilage of gum-arabic, containing from three to five per cent. of phenic acid. Good results are claimed to follow, as is also the case when the phenic acid is mixed with vaseline.

The method of Koch consists in applying, by means of a camel's-hair pencil, the following ointment in a perfectly thin layer over the affected parts:

Creoline, 1 part;
Iodoform, 4 parts;
Lanolin, 10 parts.

After the ointment is applied, it is then covered with a thin layer of gutta-percha. This method is said to be especially applicable to erysipelas of the face and of the hairy scalp.

In the method of treatment of Nussbaum and Brunn, ichthyol is employed in collodion.

Hallopeau recommends the use of a solution of 1 part to 20 of salicylate of sodium. Thick cloths are wet with this solution, then applied to the affected parts, and then covered with a layer of rubber-cloth, so as to prevent evaporation. Almost immediate relief is obtained, and a cure is said to follow on the third to the fifth day.

Hunter recommends the injection of carbolic acid into the healthy skin at a distance from the part infected. This method of treatment is extremely painful, and is only applicable in cases of grave nature of the face or hairy scalp.

Dr. Kraske advises making an incision in the healthy skin around the erysipelatous patch before applying the antiseptic substance.

Wolfler makes use of mechanical compression by bandages applied so as to circumscribe the inflamed tissue, while Dr. Kraske proposes elastic rubber bands to accomplish the same effect where these are applicable.—*La Practique Médicale*, No. 33, 1890.

THE TOXIC PRINCIPLE OF PYRETHRUM FLOWERS.

Messrs. Schlagdenhauffen and Reeb have been for some time occupied in a pharmacological and chemical investigation of pyrethrum flowers from different sources, and as a result of their investigations they announce (*American Journal of Pharmacy*, September, 1890) that the active principle of pyrethrum flowers is an acid soluble in alcohol, amylic alcohol, ether, and chloroform, which may be isolated by means of ether, after having been converted into an alkaline salt, and decomposed by tartaric acid in aqueous solution.

When pyrethrotoxic acid was hypodermically injected into animals, it was observed that the poison produced its effects in two distinct stages. In the first there was an excitement more or less pronounced, proportional to the quantity administered; in the second there was a complete prostration, accompanied always by paralysis of the lower extremities, which might disappear after a time, or be the precursor of a fatal issue, the respiration and circulation being affected only in the latter case.

The Therapeutic Gazette

EDITED BY
ROBERT MEADE SMITH, A.M., M.D.,
Professor of Comparative Physiology, University of Pennsylvania,
PHILADELPHIA.

GEO. S. DAVIS,
Medical Publisher, Box 470,
DETROIT, MICH.
Philadelphia, 714 Filbert Street.

SUBSCRIPTION RATES FOR 1890.

(Journal increased to 72 pages each month.)

THERAPEUTIC GAZETTE (postage included).....$2.00
THERAPEUTIC GAZETTE with MEDICAL AGE..... 2.50
THERAPEUTIC GAZETTE with AMERICAN LANCET 3.25
THERAPEUTIC GAZETTE with AGE and LANCET... 4.00

Foreign subscriptions may be ordered through our agent in England, Mr. H. K. Lewis, Medical Publisher and Bookseller, 136 Gower Street, London. Price 10s. Remittances may be made either by Postal Order or Stamps.

Price to Foreign Subscribers direct (postage included), $2.50 (10 shillings). English postage stamps received on remittances.

Editorial communications should be addressed 332 South Twenty-first Street, Philadelphia. Articles intended for the Original Department of the GAZETTE will be accepted only with the understanding that they are contributed to it exclusively.

Business communications should be addressed to the Publishers.

Leading Articles.

INSOMNIA AND HYPNOTICS.

IT is generally agreed at the present day that during sleep the brain is relatively anæmic. The observations of Durham, of Hammond, of Mosso, and others have proved this. During sleep all the encephalic blood-vessels are under a diminished pressure, as shown by the manometer, and this lessening of the active flow corresponds with a diminution of cerebral function. This is in accordance with the facts of physiology generally; the performance of function is characterized by vascular activity and fulness, the cessation of function is attended with decrease of the vascularity and volume of the part.

The immediate cause of sleep, however, is not simply the shutting off of a portion of the blood-current from the brain. The lessening of the blood-supply to the encephalon is rather the accompaniment than the cause of sleep. The *vera causa* is the torpor—*engourdissement*, as the French physiologists term it—of the cerebral cells. This *engourdissement* is the result of waste, unbalanced by repairing the hemispherical ganglia which become functionally inactive owing to diminution of oxidating material as well as to clogging of the venous and lymphatic channels by the accumulated *débris* of organic combustions.

But this is not all. As the effete products of cell-function have a paralyzing action on the cells themselves,—a truth exemplified even in the protoplasmic life of microbes, which are now known to generate, by their activity, ptomaïnes that are microbe poisons,—so the toxic theory of sleep, first propounded by Preyer, has much probability in its favor. Preyer thinks that lactic acid is one of the principal waste products whose relation in the blood causes sleep, and refers to experiments of his own, where lactic acid was injected into the veins of animals, and produced a deep somnolent condition, which could not be distinguished from natural sleep. But lactic acid is only one of the toxic products of the living economy; the urinary salts are mostly destructive of cell life, and every cell is a laboratory of poisons,—leucomaïnes,—which exercise their injurious effects on the organism as soon as the emunctories are incompetent to perform thoroughly their task of elimination. It is in the urine that we find the greater part of these excrementitious products. Bouchard, who has made many interesting experiments on animals by injecting the urine of various physiological and pathological states, finds that the urine of the day possesses a toxicity twice as great as that of the night, and that the former produces narcosis, while the latter possesses convulsivant properties.*

From these experiments the inference is drawn that during the period of waking activity the processes of disassimilation give rise to products which, by their accumulation, produce sleep, and this accumulation takes place because the elimination of these substances by the urine goes on the more slowly the nearer we approach the usual period of sleep. On the other hand, during sleep the convulsivant substances which result from denutrition co-operate in bringing about awakening.†

Insomnia is produced by causes which augment the excitability and functional activity of the cerebrum. As the exercise of the emotions and intellect produces a wakeful state, and the continuous application of the attention to any subject is inimical to the repose of the brain, so causes of a psychical

* *La Médecine Moderne*, 1890, p. 183.
† Ibid., *loc. cit.*

order play a principal part in the etiology of insomnia. Anything which keeps consciousness aroused provokes wakefulness; hence pain, from whatever cause, is antagonistic to sleep. Functional derangements of the viscera, sufficient to engage the attention, are promotive of insomnia; thus we have the insomnia of cardiac, pulmonary, and gastric affections. But it is not even necessary that the victim of wakefulness from these causes should be conscious of the sensation of pain or distress, and there are digestive disturbances which produce no pain, and which none the less prevent sleep. It is probable that these causes act reflexly by determining an amount of cerebral congestion incompatible with sleep. Genital excitations also may keep up a state of arterial plethora in the cerebrum inhibitory of sleep; febrile conditions, whether by the influence of toxic principles attending them or of the circulatory disturbances which they entail, have the same result; and the free use of certain antihypnotic agents—as tea, coffee, alcohol, and tobacco—may for a time banish "tired nature's sweet restorer."

Doubtless insomnia is one of the crying evils of the present day. The conditions of our modern life entail on students, men of business, professional and literary men, anxiety, worry, and fierce competition; the brain is unnaturally forced and the delicate machinery of its circulation is early deranged; loss of tone of the cerebral blood-vessels results in malnutrition of that organ, and if not in absolute, at least in partial insomnia; the little, dreamy, broken sleep that is obtained being insufficient to give a proper fitness for the active duties of life. The poor sleepers of the day are legion. Such persons are constantly tired; after an hour or two of application to any subject there is a feeling of exhaustion, which often prompts the sufferer to resort to some stimulant,—coffee, wine, tobacco; in some instances the help of morphine is sought,—when he feels in better trim, and succeeds in completing the task before him. Some of these victims of insomnia go to sleep readily, but the sleep is dreamy and unrefreshing; the night seems interminably long. Others fall asleep soon after going to bed, but they wake up after two or three hours of sleep, and then fail to go to sleep again; the consequence is that they are exhausted the next day. Others, still, have their sleeping periods sandwiched in between periods of wakefulness, during which thoughts and imagination run riot. The physician who is consulted by patients of this kind will be careful how he prescribes soporifics. The relief obtained by an hypnotic dose of sulphonal, chloral, or opium is so speedy and so magical that the temptation is great to resort to these drugs, but (to say nothing of the possible baneful effects of these medicaments on the cerebral cells) this kind of treatment can only be called symptomatic, and does not remove the cause which is still operative for mischief. As sleep may be hypothetically regarded as brought about by certain toxic products of exercise, and as muscular exercise is known to be more productive of these hypnogenous substances than intellectual, so the medical adviser may very properly urge his patient to perform some severe muscular work before going to bed,—a long walk in the open air, dumb-bell exercise, etc. Many a victim of insomnia has found a remedy for his infirmity in garden-work, joinery, wood-sawing, or even in such active sports as base-ball and lawn-tennis. Sleep is much more certain to follow muscle-tire than brain-tire.

As the leading indication is to induce that cerebral torpor which is the necessary antecedent of sleep, it is well to advise the insomnic patient to avoid all cerebral excitants in the evening. He should not indulge in tea, coffee, tobacco, or spirits; he should refrain from reading, writing, and other mental labor. Even novel-reading (recommended by some as a diversion) is of questionable utility; listening to the reading of a dull book is a much more rational expedient. If one can succeed in breaking the train of thought by fixing the attention on any series of monotonous sounds (the singing of crickets, the roar of a distant waterfall, the whistling of the wind down the chimney, etc.), he will often, before he is aware of it, be caught in the toils of Somnus.

The sleep state being one in which the cerebral arterioles are contracted, with lessened circulation in the encephalon, the artificial production of this condition would seem to be favorable to sleep, and much account has been made of cold applications to the head, made with the intent to exsanguinate the brain, hot foot-baths to determine blood from the head, and the general warm bath as a powerful means of derivation. Hammond states that he has seen the application of the cold douche to the heads of refractory prisoners bring on a deep sleep. We believe, however, that cold to the head, as a means of provoking sleep, oftener fails

than succeeds, and we have even known it to aggravate the insomnia. Of more efficacy is bathing the trunk and limbs with cold water, followed by a brisk rubbing to induce a reactionary glow; standing naked on the cold floor a few minutes, then a hasty rub-down, often does good in the same way by derivation. Of still greater benefit is the warm bath or wet pack, as has been proved in innumerable instances in children and in insane persons.

Where the insomnia depends on peripheral or visceral irritation, the remedy is sufficiently plain. The pain of an abscess, of a carbuncle, of a dermatosis, will, perhaps, require an opiate; digestive insomnias are often especially troublesome. While some persons sleep best after a full meal, others cannot sleep well while the primary digestive process is going on, especially if the digestion be laborious and difficult. Here the remedy would be a light supper, with milk for the drink instead of tea or coffee. Germain Sée speaks highly of drachm doses of bichlorate of soda in a tumbler of hot water at the hour of retiring; in the terminology of that writer, there is nothing but *hyperchlorhydria* that causes this sleepless agitation. Other cases of insomnia are, as Hammond points out, of the asthenic and passive variety, and require not only nutritious food, but stimulants. A glass of hot milk at bedtime, with a tablespoonful of whiskey, will often speedily induce sleep; a cup of beef-tea is sometimes worth more than any hypnotic.

In the insomnia due to dyspnœa, the cardiac or other cause claims the first attention. For cardiac asthma, iodide of potassium, iodide of ethyl, inhalations of pyridine often do good, though in obstinate cases the resort will finally be to hypodermic morphine.

Among the prevalent insomnias, those of toxic origin deserve a special treatment. How many of the cases that come under the notice of the physician depend on lithæmia and uræmia! Here an eliminative treatment by saline cathartics, diuretics, and even sudorifics is demanded. In lithæmic cases, moderate physical exercise, by favoring the complete transformation of waste products and promoting circulation and excretion, will always benefit. Much of that restless irritability, which persons of sedentary habits often experience, as well as that oppressive drowsiness of which they sometimes complain, will be better dissipated by active exercise in the open air than by any pharmaceutical remedy.

This brings us to the subject of the hypnotics, properly so called, which sometimes become necessary as adjuvants to the hygienic treatment. On the hypothesis that normal sleep is brought about by a sort of intoxication of the cerebral cells (Preyer's theory), there are certain drugs which also produce their result by so modifying these cells that their function is for the time suspended. Foremost among the pure hypnotics which produce sleep without causing any narcosis, we have chloral, sulphonal, paraldehyde, and urethan. The consideration of these, along with other sleep-producers, their indications and contraindications, must be reserved for another number.

TREATMENT OF GONORRHŒAL RHEUMATISM.

THE treatment of blennorrhagic arthritis (otherwise called gonorrhœal rheumatism) has always been vexatious and perplexing. The older authorities, regarding it as a variety of common rheumatism, taught that it should be treated in the same general principles as this latter; the bowels to be cleared by calomel, Dover's powder to be given to relieve pain, hot anodyne fomentations to be used, and alkalies, subsequently iodide of potassium and bark, compound tincture of guaiac, etc., to be administered. Under this treatment the case was often exceedingly protracted, and patients were apt to recover with stiff joints.

When salicylic acid and the salicylates were introduced into the therapeutics of rheumatism, it became customary to treat gonorrhœal arthritis with these remedies. The result was never very favorable. Remedies which acted beneficially in ordinary rheumatism were found to be inefficacious in blennorrhagic swellings of the joints.

There was an advance in the treatment of this affection when it was taught that gonorrhœal arthritis is a form of pyæmia, generally mild (it is true), but sometimes appearing in a severe and intractable form. Barlow, in 1860, was the first to enunciate this view in the first edition of his classic treatise on "Diseases of the Joints." He reports several cases which were attended with suppuration of the knee-joint (the site of predilection of this form of arthritis), and subsequent disorganization of the joint. According to Barlow, "A certain sluggish form of *contagium vivum*, dumb-bell microzymes, or a condition

of fluids and tissues incapable of cultivating the more active forms, modify the disease down to a slight, comparatively harmless process."

Barlow further insists on the fact, now generally recognized by pathologists, that the joint-complications of gonorrhœa are not produced by rapid suppression of the urethral discharge, for it is in long-standing cases that such trouble arises. The disease, being a manifestation of blood-poisoning, should be treated energetically by quinine, which he regards as the best antiseptic for the purpose. He would prescribe, in ordinary cases, 10 grains every four or six hours, and, where there is much effusion with distention of the joint, he would aspirate or antiseptically puncture the joint with piston-trocar and hydraulic tube.

Barlow's view of the pathogeny of gonorrhœal rheumatism has been strikingly confirmed by subsequent investigators. According to Gerster, this form of arthritis is due rather to the absorption and presence of simple pyogenic organisms than of gonococci. He regards it as certain "that pus-generating organisms play an important part in cases of gonorrhœic and non-gonorrhœic urethritis, and that the metastatic processes complicating urethral inflammations are mostly chargeable to their presence and not to the presence of gonococci."

Gonorrhœal arthritis, then, being a form of septicæmia, should evidently be treated as such. The best success seems to have attended the free use internally of quinine, with or without tincture of chloride of iron, such anodynes as might be needed for the relief of pain (and here we may mention that Refat, in a late number of the *Bulletin Général de Thérapeutique*, speaks highly of phenacetin in 10 grain doses every three hours till a drachm has been taken, this medication to be continued several days), and, lastly, the proper local treatment by splints and aspiration.

Foyrer, of Calcutta, was one of the first to advocate paracentesis of the joint in both chronic and subacute forms, care being taken to exclude the air by carefully closing the puncture and fixing the joint on a splint.

Bryant (*vide* "Surgery") endorses this mode of treatment, affirming that it had given him great satisfaction in one or two severe cases, but adds, that "it is a practice that ought to be followed with extreme caution." Since the introduction of the Dieulafoy and other aspirators, with their fine needles and exhaust-bottles, operations for removal of fluids from joints and other closed cavities are performed with great comparative safety, and synovitis of the knee-joint, attended with copious effusion from whatever cause, is very generally treated by aspiration by the surgeon of to-day. Dr. Henry O. Marcy has published a pamphlet "On Aspiration of the Knee-Joint," in which he gives the details of fourteen cases which he had aspirated; all did well, and in all there appeared to be marked shortening of the duration of the affection. In most of these cases—tabulated as gonorrhœal rheumatism—the fluid withdrawn was serous, sometimes sero-sanguinated, not purulent. It was generally necessary to reaspirate after a couple of days; sometimes numerous aspirations were made, but generally not more than two or three were required. The relief obtained by drawing off the fluid was in all instances instantaneous. The temperature fell, the pulse lowered, and sleep followed. The knee-joint was generally bandaged and fixed to a plaster splint after the aspiration. With few exceptions the No. 1, or smallest-sized needle, was used.

Other surgeons in aspirating the knee-joint for this affection have found it necessary to use one of the larger-sized needles; the smaller needles are almost certain to be stopped up by blood clots during the operation.

Aspiration seems to do good in this disease, not merely by relieving local tension and pain, but by promoting absorption. This is the almost uniform testimony of those who have resorted to this mode of treatment of gonorrhœal arthritis.

Dieulafoy, in 1878, reported that he had aspirated the knee-joint two hundred times. He believed the operation to be a safe and efficient one in a large class of cases. He uses the No. 2 needle, first placing a rubber bandage around the knee, leaving uncovered the place of puncture. This point of election is the external cul-de-sac of the joint, on a level with the upper border of the patella, and about ten centimetres outside of this bone. Compression is used as soon as the fluid is evacuated by a flannel bandage applied from the foot up to the thigh. This is removed in twenty-four hours, and, if fluid has collected, it is reaspirated.

Since the presentation of Marcy's paper, he states that he has aspirated the knee-joint eighteen times, and twice injected and

bacillus anthracis never becomes the bacillus subtilis.

To determine the species of a bacillus, it will not do to content one's self with isolated, fixed, or variable characters, but it is necessary to note the greatest sum possible of morphological and biological characters which it can present, otherwise there is nothing but misconception and confusion in bacteriology. The presence of the bacilli of typhoid fever in the mesenteric glands, the liver, the spleen cannot give rise to any mistake, because there are never found in those organs similar bacilli. But we can easily be mistaken in endeavoring to identify the typhoid bacillus in the intestinal liquids, the water, or the air, for these media contain a great number of microorganisms which much resemble it. The same mistake may be made with reference to the bacillus of diphtheria; so that it will not do to affirm the presence of a specific microbe in the water, the soil, in sewer-pipes, etc., without subjecting these results to a rigorous criticism.

Per contra, it has been possible to establish, from the very first, for the bacilli of tuberculosis and of cholera, characters which enable microbiologists to determine their species with absolute certainty. This result, this rigorous precision of diagnosis, is what we must require in the examination of the bacilli of diphtheria and of typhoid fever; it is easy to understand the prophylactic value which a sure differentiation of these infectious agents would give.

Koch next asserts that his researches on the characters and habitats of the bacillus tuberculosis have taught him the bounds which prudence has set, and the necessity of extreme caution in these investigations. One can acquire certainty only after the study of the reactions under aniline-staining fluids, and after long watching pure cultures and testing pathogenic qualities. He affirms that he has been able thus to prove that the bacillus of the tuberculosis of fowls differs in many points from that of other animals; this he has shown both by cultivating it and by the results of inoculation. To know whether he had to do here with a special microbe or a variety of the true bacillus of tuberculosis, he endeavored to produce artificial varieties of the tubercle bacillus by all sorts of procedures. He exposed cultures for many months to high temperatures, amounting almost to the destruction of these bacilli. He subjected them to the action of light, of moisture, of chemical substances, cultivating them in competition with other bacilli, passing them many time through the bodies of animals more or le refractory to tuberculosis.

It was only the past year that, having re ceived a certain number of fowls affecte with tuberculosis, he was able to obtain se eral pure cultures from this direct source; th results were identical with those which hav been mentioned above.

The bacilli of the tuberculosis of fowls co stitute, then, a different species (though ver near of kin) from those of common tube culosis. The recent investigations of Mafuc have confirmed this conclusion. We cann say that this new bacillus is pathogenic fo man before having noted its presence in th human organism.

Recent researches have also shed light o the question of the relations between bacteri and the infectious diseases. When we hav established that certain bacteria are foun constantly in this or that infectious disea that they are never met in any other, tha they can live and be cultivated out of the ani mal body, and that in this state they are capa ble of reproducing the disease, their etiologi cal *rôle* is proved. This demonstration ha been made for tuberculosis, erysipelas, te anus, and many of the diseases of the lowe animals.

Per contra, the fact that we cannot repro duce with pure cultures a disease in animal is evidently not sufficient to prove that th particular bacillus is not the cause of the dis ease in man. This is the case with the bacill of lepra, of Asiatic cholera, of typhoid fever of diphtheria, and of typhus recurrens.

The study of the following questions ha also made great progress: the parasitism o bacteria, their mode of penetration and o evolution in the organism, the chemical products (tox-albumens) resulting from thei activity, the combinations of several infectious diseases in the same individual, immunity, etc. The theory of phagocytosis, on the other hand, is every day losing ground.

The study of the action of light and of heat on bacteria has given us important results for prophylaxis.

Solar light has a destructive action on the bacilli of tuberculosis; according to the thickness of the stratum of the culture exposed to direct sunlight, the bacilli are killed in a time varying from a few minutes to a few hours. Diffused (indirect) light has a like action, but more slow; cultures exposed to the daylight by a window are killed in five to seven days.

All bacteria have need of moisture in order to develop, but they cannot, *per contra*, quit the medium in which they are growing, and are not susceptible of diffusion through the air, except under the form of dust, the product of desiccation.

Bacteriological researches have resulted in much that has been delusive, but also in much that has been encouraging.

The fact that we have not yet been able, despite indefatigable researches and painstaking, to discover the micro-organisms of the exanthematous diseases, proves that we shall be compelled to seek for the pathogenic agents by methods of another order. Perhaps we have to do in these diseases with microbes belonging not to the group of bacteria, but to that of protozoa, like those which have been found in the blood of patients affected with malaria.

As for the practical results connected with bacteriological studies, they are already considerable.

Disinfection is performed in a more judicious and effective manner. Potable waters are being examined from the point of view of their infectiousness; the same may be said of milk and other aliments, of the air in sewers, in school-rooms, etc. We can now detect at its very commencement, and with almost infallible certainty, an epidemic of Asiatic cholera, and institute in time the necessary prophylactic measures. The early diagnosis of tuberculosis has been facilitated.

From the point of view of direct therapeutic utility for the individual, we can only thus far boast of the preventive inoculations of Pasteur against charbon, symptomatic charbon, rabies, etc. As for rabies, it is, perhaps, not a bacillary disease, but the study of this disease has, at least, undergone development entirely upon bacteriological ground.

But we may hope that, even from a therapeutic point of view, bacteriology is entering upon an important future; much more may be expected, it is true, for diseases of prolonged or chronic duration than for those that run a very rapid course. With respect to tuberculosis, however, all the germicide agents thus far employed in this disease have been without direct success, but this is due to the fact that our first experimentation was made on man, when we should, perhaps, have commenced by the study of the influence of these agents on cultures, then on animals.

Koch concluded by saying that he had found, after numerous experiments, many substances which are capable of preventing the development of the bacilli of tuberculosis, and this is so far a matter of great importance. The substances which succeed the best are the essential oils, certain aromatic compounds, such as β-naphthol, amine, paratoluidine, certain aniline coloring matters, such as fuchsine, methyline blue, gentian violet, auramine; then mercurial vapors and the compounds of silver, and especially of gold with hydrocyanic acid; thus the cyanide of gold in a solution of 1 to 2,000,000 arrests the multiplication of the microbes in cultures out of the animal organism. In animals, these substances do not avail in arresting the progress of the disease. Of late, however, he had succeeded in finding certain chemical compounds which have shown themselves to be active even when given to animals. Guinea-pigs which had been made to ingest these substances, remained refractory to the inoculation of tuberculosis. In others, already previously infected, the disease was seen to undergo regression. The name of these antibacillary agents was not given; it is understood that the experimentation is to be continued.

If it should be confirmed that there are substances capable by their antagonistic nature of arresting the progress of tuberculosis in animals and in man, it is to be hoped that similar antidotal agents may be found for other infectious diseases.

THE EFFECTS ON NUTRITION OF ARTIFICIAL DERMATITIS.

DR. E. QUINQUAUD has been performing a number of careful experiments as to the different disturbances of nutrition which follow the production of artificial dermatitis, and his experiments, which are reported in *La Tribune Médicale* for July 17, 24, and 31, 1890, have led him to the following conclusions:

1. Death may follow the production of destructive dermatitis, even if of inconsiderable extent.

2. Burns produce various disturbances in the different tissues and functions of the body. The pulmonary exhalation of carbon dioxide is immediately decreased at the time of the production of the dermatitis. Sometimes there is a transient increase, but this gives away to a gradual decline, until death takes place.

3. The quantity of oxygen absorbed follows the same oscillations; sometimes secondary infections may be productive

of hyperthermia, and then the exhalation of carbon dioxide is inverted, and an increase is produced up to the next period of the dermatitis. The absorption of oxygen does not, however, follow a parallel course. Often the temperature, oxygen absorbed, and carbon dioxide eliminated do not follow a constant relationship, and there is thus a want of nutritive harmony produced which is very important from a physiological and pathological point of view.

4. The elementary respiration of the tissues, especially of the muscles, remains the same up to the next stage of the burn. Nevertheless, at the last moments of life, there is to be noted a diminution coincident to the fall of temperature.

5. The study of the gases of the blood permits of a slight increase of nutritive activity in the first hours following the production of the dermatitis. A prominent phenomenon is a slowing of nutrition in the capillary areas, but in certain experiments it was three times more feeble than the normal state, while the oxygen absorbed was hardly increased and the carbon dioxide was only slightly decreased.

6. Three days after the lesion the respiratory capacity of the blood commenced to diminish, and if the animal survived seven, eight, or ten days the respiratory capacity fell to one-half normal. This is, then, a symptom of the greatest importance, and will largely explain the mechanism of death as a consequence of burns.

7. The artificial lesion of the skin often produces a slight increase in the urea of the blood at first, but the increase is more manifest in the final periods, and the uræmia so resulting is likewise an important factor in the mechanism of death. The urea of the muscles and of the liver followed parallel oscillations.

8. Glucose of the blood and of the tissues commences to diminish perhaps the third day, but this diminution is feeble even towards the fatal issue, and at this time the hemorrhage may increase the quantity of glucose in the blood.

9. Hepatic glycogen diminishes rapidly towards the fifth day after the burn and all the glycogen may entirely disappear, and this also is one of the causes of death.

10. At an advanced period the dermatitis produces lowering of blood-pressure which may fall to one-half the normal height.

11. This reduction in blood-pressure may occur from the second to the eighth day after the burn.

12. Under the influence of artificial dermatitis the fermentable substances of the urine diminish. This also holds for phosphoric acid and urea and for nitrogen, these diminutions in the excretory products coinciding with an increase in temperature.

13. Under the influence of dermatitis there is a slight increase in the water in the muscles, although towards death a slight dehydration of these tissues may be determined.

14. The agents which are most hurtful to the organism are the toxic substances, probably of cutaneous origin, for the microbes in the surface ulcerations rarely penetrate into the blood.

15. Finally, the causes of death are to be found in progressive disturbances of nutrition, of which the most important are the disappearance of hepatic glycogen, the retardation of the nutritive changes in the tissues, the final prevention of tissue respiration, and the presence of toxic matters in the blood and tissues.

The question of the genesis of these accidents is, therefore, an extremely complex one, and it is this great complexity which renders the therapeutics of this condition a matter of such great difficulty.

A METHOD OF EMPLOYING ANTISEPSIS IN RECENT ANTERIOR URETHRITIS.

The above was the title of a paper read by DR. J. WILLIAM WHITE, of Philadelphia, at the fourth annual meeting of the American Association of Genito-Urinary Surgeons, held in Altoona in June last (*Journal of Cutaneous and Genito-Urinary Diseases*, August, 1890).

His conclusions are as follows: 1. The miscropical and experimental evidence in favor of the bacterial origin of gonorrhœa is confirmed by clinical and therapeutic experience. 2. The results of antiseptic treatment have not been so uniformly successful as would be expected, on account of (*a*) the anatomical and physiological peculiarities of the male urethra, (*b*) the difficulty of applying sufficiently energetic local antisepsis, (*c*) the necessarily intermittent character of such applications, and (*d*) the failure to combine with the topical treatment appropriate internal medication. 3. No one antiseptic agent can be depended upon, in the strength at which it can be borne by the inflamed urethral mucous membrane, to completely sterilize the discharges and the suppurating surfaces. A judicious combination of several

antiseptics, if not essential to success, is at least of considerable value. 4. The internal administration of salol, in conjunction with copaiba and cubebs, renders the urine aseptic, and probably antiseptic, so that it acts as an exceptionally thorough and efficient antiseptic injection, shortening the duration of the disease and diminishing the frequency and severity of the complications. 5. The production of urinary asepsis by internal medication is of considerable value not only in the inflammatory affections of the genito-urinary tract, but in the preparation of the patient for operation upon those organs and in the after-treatment.

In the discussion which followed, DR. R. W. TAYLOR did not deny that gonorrhœa might be the result of the gonococcus, but there was no proof of it other than the case of Bumm's. The micro-organisms theory was elusive in practice. He had found no good at all from retro-injections or from injections of bichloride of mercury in gonorrhœa. He did not think one could draw definite conclusions as to the efficacy of salol in this disease so long as it was used in combination with other drugs like cubebs and copaiba. Time was also a very important element in testing a drug.

DR. BELFIELD thought Dr. White had taken a very rational position in the matter. In estimating the value of any drug in the treatment of gonorrhœa, we must bear in mind that the disease was often very closely simulated by something which was not gonorrhœa. A man who had had gonorrhœa might have an outbreak which closely resembled the genuine outbreak, and the clinical course of this would be much more favorable, whatever the therapeutics employed, than in case of a fresh infection of a virgin urethra. He believed gonorrhœa to be a parasitic disease, yet all the remedies which destroyed parasites had been unavailing in his hands, and he employed the purely empirical treatment of hydrastis locally and an alkali internally. He had had no experience with the combination used by Dr. White. The fact that in any given urethra about one-half of the lacunæ opened backward was, as Dr. White had suggested, an important factor in the persistence and recurrence of gonorrhœa. The lacunæ which opened backward formed a nidus for the reception of gonorrhœal poison.

DR. F. T. BROWN said he was so thoroughly satisfied as to the position of Neisser that he did all his work on the presumption that his statements were going to hold good. He had relied upon the Lafayette mixture, with the employment locally of bichloride retrojections,—1–30,000 to 1–15,000. After a week's use he generally combined a weak solution of nitrate of silver,—1–1000 to 1–2000.

DR. J. B. WHITE thought the preponderance of evidence was to the effect that gonorrhœa was a specific disease. He had not seen satisfactory results from deep urethral injections. He had sometimes seen considerable urethro-vesical irritation occasioned by them. He had not had satisfactory results from the use of the bichloride solution, either in the mild or strong solution. He had obtained better results from simply washing out the urethra with warm water, and then injecting a mild solution of sulphate of zinc. As a rule, he did not give any internal treatment unless the symptoms required it.

DR. J. A. FORDYCE had used in one hundred and fifty or two hundred out-patients of the Bellevue Hospital a solution of nitrate of silver in the strength of about 1–2000 to 1–4000. This gave rise in some exceptional cases to bloody urine, in others to great pain on urination, so that treatment had to be suspended or the solution made weaker. In some cases in which the nitrate of silver caused much pain he gave the Lafayette mixture internally. He thought he got better results from this weak solution of nitrate of silver than from the ordinary injections, and felt disposed to continue its use.

DR. A. POST thought, in testing new remedies, first cases of gonorrhœa were the only ones that should be considered. He was surprised that so little value had been placed on the oil of sandal-wood, which he regarded the best of antiblennorrhagics. It certainly was equal in efficacy upon the gonorrhœa with copaiba, and much less likely to upset the stomach. His favorite injection was a very dilute solution of bichloride of mercury. He did not use injections during the acute inflammatory stage.

DR. W. K. OTIS thought salol, if efficacious, a particularly good remedy, because while giving that it would not be necessary to give injections. Even if one believed in the gonococcus, one would not give injections in the acute stage, because the gonococcus was then already out of the reach of injections, and there was a risk of causing a posterior urethritis by washing the pus down the urethra. In case of fresh gonorrhœa,

of hyperthermia, and then the exhalation of carbon dioxide is inverted, and an increase is produced up to the next period of the dermatitis. The absorption of oxygen does not, however, follow a parallel course. Often the temperature, oxygen absorbed, and carbon dioxide eliminated do not follow a constant relationship, and there is thus a want of nutritive harmony produced which is very important from a physiological and pathological point of view.

4. The elementary respiration of the tissues, especially of the muscles, remains the same up to the next stage of the burn. Nevertheless, at the last moments of life, there is to be noted a diminution coincident to the fall of temperature.

5. The study of the gases of the blood permits of a slight increase of nutritive activity in the first hours following the production of the dermatitis. A prominent phenomenon is a slowing of nutrition in the capillary areas, but in certain experiments it was three times more feeble than the normal state, while the oxygen absorbed was hardly increased and the carbon dioxide was only slightly decreased.

6. Three days after the lesion the respiratory capacity of the blood commenced to diminish, and if the animal survived seven, eight, or ten days the respiratory capacity fell to one-half normal. This is, then, a symptom of the greatest importance, and will largely explain the mechanism of death as a consequence of burns.

7. The artificial lesion of the skin often produces a slight increase in the urea of the blood at first, but the increase is more manifest in the final periods, and the uræmia so resulting is likewise an important factor in the mechanism of death. The urea of the muscles and of the liver followed parallel oscillations.

8. Glucose of the blood and of the tissues commences to diminish perhaps the third day, but this diminution is feeble even towards the fatal issue, and at this time the hemorrhage may increase the quantity of glucose in the blood.

9. Hepatic glycogen diminishes rapidly towards the fifth day after the burn and all the glycogen may entirely disappear, and this also is one of the causes of death.

10. At an advanced period the dermatitis produces lowering of blood-pressure which may fall to one-half the normal height.

11. This reduction in blood-pressure may occur from the second to the eighth day after the burn.

12. Under the influence of artificial dermatitis the fermentable substances of the urine diminish. This also holds for phosphoric acid and urea and for nitrogen, these diminutions in the excretory products coinciding with an increase in temperature.

13. Under the influence of dermatitis there is a slight increase in the water in the muscles, although towards death a slight dehydration of these tissues may be determined.

14. The agents which are most hurtful to the organism are the toxic substances, probably of cutaneous origin, for the microbes in the surface ulcerations rarely penetrate into the blood.

15. Finally, the causes of death are to be found in progressive disturbances of nutrition, of which the most important are the disappearance of hepatic glycogen, the retardation of the nutritive changes in the tissues, the final prevention of tissue respiration, and the presence of toxic matters in the blood and tissues.

The question of the genesis of these accidents is, therefore, an extremely complex one, and it is this great complexity which renders the therapeutics of this condition a matter of such great difficulty.

A METHOD OF EMPLOYING ANTISEPSIS IN RECENT ANTERIOR URETHRITIS.

The above was the title of a paper read by DR. J. WILLIAM WHITE, of Philadelphia, at the fourth annual meeting of the American Association of Genito-Urinary Surgeons, held in Altoona in June last (*Journal of Cutaneous and Genito-Urinary Diseases*, August, 1890).

His conclusions are as follows: 1. The miscropical and experimental evidence in favor of the bacterial origin of gonorrhœa is confirmed by clinical and therapeutic experience. 2. The results of antiseptic treatment have not been so uniformly successful as would be expected, on account of (*a*) the anatomical and physiological peculiarities of the male urethra, (*b*) the difficulty of applying sufficiently energetic local antisepsis, (*c*) the necessarily intermittent character of such applications, and (*d*) the failure to combine with the topical treatment appropriate internal medication. 3. No one antiseptic agent can be depended upon, in the strength at which it can be borne by the inflamed urethral mucous membrane, to completely sterilize the discharges and the suppurating surfaces. A judicious combination of several

antiseptics, if not essential to success, is at least of considerable value. 4. The internal administration of salol, in conjunction with copaiba and cubebs, renders the urine aseptic, and probably antiseptic, so that it acts as an exceptionally thorough and efficient antiseptic injection, shortening the duration of the disease and diminishing the frequency and severity of the complications. 5. The production of urinary asepsis by internal medication is of considerable value not only in the inflammatory affections of the genito-urinary tract, but in the preparation of the patient for operation upon those organs and in the after-treatment.

In the discussion which followed, DR. R. W. TAYLOR did not deny that gonorrhœa might be the result of the gonococcus, but there was no proof of it other than the case of Bumm's. The micro-organisms theory was elusive in practice. He had found no good at all from retro-injections or from injections of bichloride of mercury in gonorrhœa. He did not think one could draw definite conclusions as to the efficacy of salol in this disease so long as it was used in combination with other drugs like cubebs and copaiba. Time was also a very important element in testing a drug.

DR. BELFIELD thought Dr. White had taken a very rational position in the matter. In estimating the value of any drug in the treatment of gonorrhœa, we must bear in mind that the disease was often very closely simulated by something which was not gonorrhœa. A man who had had gonorrhœa might have an outbreak which closely resembled the genuine outbreak, and the clinical course of this would be much more favorable, whatever the therapeutics employed, than in case of a fresh infection of a virgin urethra. He believed gonorrhœa to be a parasitic disease, yet all the remedies which destroyed parasites had been unavailing in his hands, and he employed the purely empirical treatment of hydrastis locally and an alkali internally. He had had no experience with the combination used by Dr. White. The fact that in any given urethra about one-half of the lacunæ opened backward was, as Dr. White had suggested, an important factor in the persistence and recurrence of gonorrhœa. The lacunæ which opened backward formed a nidus for the reception of gonorrhœal poison.

DR. F. T. BROWN said he was so thoroughly satisfied as to the position of Neisser that he did all his work on the presumption that his statements were going to hold good. He had relied upon the Lafayette mixture, with the employment locally of bichloride retrojections,—1–30,000 to 1–15,000. After a week's use he generally combined a weak solution of nitrate of silver,—1–1000 to 1–2000.

DR. J. B. WHITE thought the preponderance of evidence was to the effect that gonorrhœa was a specific disease. He had not seen satisfactory results from deep urethral injections. He had sometimes seen considerable urethro-vesical irritation occasioned by them. He had not had satisfactory results from the use of the bichloride solution, either in the mild or strong solution. He had obtained better results from simply washing out the urethra with warm water, and then injecting a mild solution of sulphate of zinc. As a rule, he did not give any internal treatment unless the symptoms required it.

DR. J. A. FORDYCE had used in one hundred and fifty or two hundred out-patients of the Bellevue Hospital a solution of nitrate of silver in the strength of about 1–2000 to 1–4000. This gave rise in some exceptional cases to bloody urine, in others to great pain on urination, so that treatment had to be suspended or the solution made weaker. In some cases in which the nitrate of silver caused much pain he gave the Lafayette mixture internally. He thought he got better results from this weak solution of nitrate of silver than from the ordinary injections, and felt disposed to continue its use.

DR. A. POST thought, in testing new remedies, first cases of gonorrhœa were the only ones that should be considered. He was surprised that so little value had been placed on the oil of sandal-wood, which he regarded the best of antiblennorrhagics. It certainly was equal in efficacy upon the gonorrhœa with copaiba, and much less likely to upset the stomach. His favorite injection was a very dilute solution of bichloride of mercury. He did not use injections during the acute inflammatory stage.

DR. W. K. OTIS thought salol, if efficacious, a particularly good remedy, because while giving that it would not be necessary to give injections. Even if one believed in the gonococcus, one would not give injections in the acute stage, because the gonococcus was then already out of the reach of injections, and there was a risk of causing a posterior urethritis by washing the pus down the urethra. In case of fresh gonorrhœa,

he thought recovery in six weeks was doing well. He was using injections of the nitrate of silver. Patients bore it well as strong as 1 to 1000.

DR. E. R. PALMER believed in the gonococcus and in the antiseptic treatment of gonorrhœa. He had had some very favorable experience in the matter of irrigation. This he applied with the Kiefer nozzle rather than with the catheter. He believed that the solution of the problem lay largely in internal medication. There had been an era of internal medication in the past, but that was a blind one compared to this. There were the same objections to internal treatment as to local treatment,—the remedies used were liable to cause disturbance. Salol did not disturb the stomach, and should be given up to 15 grains three times a day. He was surprised to hear the statements as to the strength of nitrate of silver solutions used. He began in acute cases with a little citrate of potash internally and hot applications. As soon as it could be borne he used bichloride of mercury, the strength of the wash being determined by the sensitiveness of the urethra. A four per cent. solution of cocaine would relieve the sensitiveness if it were great. He sometimes also used the boric acid injection for its soothing effect. In the stage of decline he used an injection of nitrate of silver, five to seven and a half grains to the ounce. This injection was carried down fully six inches by means of the long solid silver catheter. If the patient complained of pain, he used cocaine. Such injections were given two or three times a week. Sometimes hot boric acid injections were used after them, and the patient was allowed to use at home any of the old injections.

DR. GLENN said that during the last five years he had obtained good results from the use of weak non-irritating injections of chloride and iodide of zinc—iodide of zinc, gr. x; chloride of zinc, gr. iii; water, ℥vi—injected with a long syringe with a good nozzle. He used it at any stage that the patient would endure it.

CANNABIS INDICA IN DISEASES OF THE STOMACH.

At the meeting of the Academie de Médecine, held July 29, 1890, PROFESSOR GERMAIN SÉE reported an elaborate work as to the value and uses of cannabis indica in the treatment of neuroses and gastric dyspepsia.

After a careful study of the pharmacology of this remedy, in which the characters of the various preparations, such as cannabin, cannabinon, tannate of cannabin, and tannate of cannabinon were described, he gave an elaborate history of the various theories which have obtained as to the causation of dyspepsia and gastric intestinal neuroses, and concluded by formulating a number of propositions as to the causes in which the use of cannabis was indicated (*La Médecine Moderne*, July 24 and 31, 1890).

Cannabis indica, as is well known, is a complex substance, and contains a dangerous tetanizing poison, analogous to strychnine or to thebaine. About thirty-five years ago, Personne succeeded in disengaging hashish from this product, and discovered in cannabis indica the existence of a glucoside and also an ethereal oil. Three products have since been extracted from Indian hemp, and Professor Sée has particularly studied the therapeutic properties of one of them,—viz., the fatty extract,—which is prepared by dissolving by heat, in butter; that is to say, the alcoholic extract made with pure alcohol at 90°, and washed with water. It has been generally thought that cannabis indica possessed somniferous properties; but Professor Sée states this to be an error. He was struck with the sedative action which this substance possesses on the pneumogastric nerve, and he has established the indications for the fatty extract in diseases of the stomach. To comprehend them, one must be acquainted with the present state of science as far as concerns neuroses and gastric dyspepsias. The neuroses—that is, maladies without lesion of the organ—were numerous at the commencement of the century, but the microscope has gradually reduced the number, sometimes revealing a chronic gastritis and atrophy of the glands, as in cancer, the knowledge of which is only recent. But true progress in the knowledge and treatment of diseases of the stomach has been effected only since physicians have understood the part played by abnormal chemical composition of the liquids contained in the stomach. Two years ago, Professor Sée made a communication to the Academy of Medicine on this subject. He now contents himself by recalling the signification of hyperchlorhydria, organic hyperacidity, and anachlorhydria. He insists on the *rôle* of hydrochloric acid in digestion, without which pepsin, which always exists in large quantity in the stomach, is inactive. The acid not only digests, but controls abnormal fermentation. It is indispensable

that the quantity of hydrochloric acid be moderate. If from one or 1.5 per cent. it rises to three, four, and five per cent., there is hyperchlorhydria, and accidents supervene.

Professor Sée concludes his essay with the following propositions:

1. Cannabis should be employed in the form of a fatty extract, in the dose of ¼ of a grain, in three doses daily, in the form of a solution; more than this amount acquires toxic properties, the result being evident by ordinary symptoms of intoxication. The chemical principles which may be extracted from cannabis indica, such as tannate of cannabin and cannabinon, have not succeeded in the author's hands in giving precise or favorable results, without doubt because they are not the true active principles.

2. It is especially in the non-organic affections of the stomach that cannabis is indicated, and these diseases comprise two groups. The first includes the alterations of the gastric juice, among which hyperacidity, due to the excess of hydrochloric acid, is most frequent; while the second group comprises exclusively cases of gastro-intestinal neuroses, without showing any modification of the gastric juice.

3. Of the dyspeptic or neurotic symptoms, all dyspepsias may be reduced to five different classes, characterized by loss of appetite, flatulence, alteration in the digestive power, participation of the intestine, and reflex nervous troubles, either of cardiac or cerebral character. The author shows that cannabis possesses great constancy in its power to arrest painful sensations and restore the appetite, no matter what may be the diseases in which these conditions are produced. If, however, they depend upon an excess of hydrochloric acid, the administration of cannabis indica should then be associated with large doses of sodium bicarbonate, administered towards the end of gastric digestion.

The author shows, however, that cannabis has no action on the gastric contractions or dilatations, although it certainly and distinctly reduces distress, which accompanies these conditions, and which are generally designated under the name of pyrosis; further, gastric digestion is facilitated by cannabis indica, when it is retarded or prevented by loss of nerve power or the excessive pain produced by hyperacidity. Cannabis, as proved by Professor Sée, however, seems to be without any power in producing relief in the various dyspeptic troubles attributable to the amount of acid present.

Finally, cannabis seems to relieve the reflex nervous troubles associated with dyspepsia; but has no effect on the nervous dispositions resulting from this cause, such as hypochondriasis, hysteria, or neurasthenia.

In conclusion, Sée maintains that cannabis is a true sedative to the stomach, and without any of the inconveniences of the narcotics.

THE RECOGNITION AND PROGNOSIS OF ACUTE PAINLESS DRY PLEURISY.

In the *Medical Record* for August 2, 1890, DR. R. VANSANTVOORD reports three cases of pulmonary trouble, which are especially interesting, as showing how comparatively trivial cases of pleurisy may be confounded with commencing pulmonary phthisis.

The first of these was that of a boy, aged 11, whose previous health had been good, except for nervous symptoms due to ocular defects. His illness dated from a chill, caused apparently by exposure. This was followed by cough, slight, but not constant, elevation of temperature, and general depression out of proportion to any manifest disease. Moist, superficial subcrepitant sounds were heard along the anterior border of the left upper lobe a week after the chill, cough with slight expectoration continuing. The superficial subcrepitant sounds extended finally over almost the whole surface of the left lung. For several days they were always present at every examination, and then gradually disappeared in about two weeks from their first appearance. During this time no pain whatever was felt. No morbid sound whatever was heard over the right lung, except an occasional coarse rhoncus. Towards the latter part of the case a slight feeling of traction was felt by the patient on deep breathing.

The patient made a complete and speedy recovery under rest, moderate counter-irritation, and tonics, mainly.

The second case was that of man, about 45 years of age, with a florid complexion, rather stout, and disinclined to take much exercise. He had a short time previously suffered from an attack of influenza during the late epidemic, went back to business, and had to lay up again, suffering from a severe cough without much expectoration, much prostration, slight elevation of temperature, and neuralgia of one supra-orbital nerve, a complaint to which he had long been subject. Physical examination showed superficial subcrepitation over the lower right lobe. There

was no dulness appreciable. There was absolutely no pain on breathing or coughing, only the patient said that his cough "came from his right side." Under quinine and arsenic, with occasional doses of phenacetin, and very small doses of aconitine for his neuralgia, the patient was entirely convalescent in two weeks, slight subcrepitation still existing, when, owing to his complete recovery as far as subjective symptoms were concerned, he was allowed to pass from under observation. His urine was normal.

The third case was that of a lady approaching middle life. She had been subject for some years to cough with expectoration, and had gradually become considerably emaciated. She was seized with intense dyspnœa during the night, having had a chill during the previous day. The pulse was rather feeble. Weak emphysematous respiration was present over the whole right lung. At the left apex there was dulness and hollow breathing, which persisted after convalescence from her acute trouble, and was evidently due to an old lesion. Over the whole of the left lung was to be heard superficial subcrepitation. She passed six hundred and ten cubic centimetres of acid, turbid urine in twenty-four hours, containing albumen, which formed a bulk of ten per cent. on depositing, urea about nineteen grammes, and numerous hyaline and granular and a few epithelial casts. Its specific gravity was 1.022. The subcrepitant sounds followed the same course as in the two preceding cases. The dyspnœa was intense and agonizing for some days. Neither pleuritic pain nor effusion that could be recognized followed. In spite of an extremely unfavorable prognosis, given by a prominent consultant, she gradually regained strength, the slight fever from which she had been suffering and the subcrepitation disappeared; her urine became normal, and she has returned to her occupation as a schoolteacher in a tolerably comfortable condition. Cardiac tonics and Basham's mixture were the main therapeutic agents used. Cough and expectoration, she thinks, is less than before the acute attack, but she suffers considerably from dyspnœa. Owing to an almost morbid sensitiveness about having her case investigated, the author was not able to obtain a specimen of her sputum for examination.

The first point of interest about this little group of cases is the latency of their course so far as subjective symptoms of pleurisy were concerned, though all suffered more or less from cough. A second point is, that in none of them, though repeatedly and carefully examined, did there ever occur a rough friction-sound. In all the only physical sign was a subcrepitation, not distinguishable in quality of sound from an intrapulmonary râle. In fact, in two of the cases the sounds at first were regarded as intrapulmonary. As they extended, however, their pleuritic origin became evident from their superficial character, the fact that extensive areas of a single lung was in each case involved, and the constant presence of the sounds day after day in the same place. Had they been due to bronchial râles they would have been bilateral, inconstant, and affected by cough. All systematic writers call attention to the fact that pleurisies occur without characteristic symptoms, and probably sometimes without physical signs. In practice, however, inflammation of the pleura is not likely to be thought of, unless it is suggested by pain or extensive effusion. This is particularly apt to be the case when the physical indication of the lesion is not a rough, grating murmur, which cannot be readily misinterpreted, but is, as in the above cases, not distinguishable in quality from intrapulmonary sounds. The possibility that râles, coarse and fine, may be of pleuritic origin was recognized by Walsh, in 1842. This is to-day recognized by all authorities, Dr. J. R. Leaming going so far as to teach that almost all râles are of pleuritic origin, a position which can hardly be recognized as conformable with what seems to be facts to most observers.

Dr. Vansantvoord further claims that if the crepitant râle of pneumonia is a pleuritic sound, as Dr. Leaming maintains, in that case its persistence through the varying stages, from consolidation to complete resolution of the pulmonary exudation, is not conceivable on the theory of its production in the alveolæ. The crepitant sounds heard at the apex in early phthisical consolidation are usually spoken of as râles indicative of local bronchitis; but, although Drs. Leaming and Loomis regard them as indicative of pleuritic exudation, in cases similar to those reported by Dr. Vansantvoord the distinction between pleuritic and intrapulmonary sounds is of primary importance in diagnosis, and therefore in the formation of a prognosis. It is customary to divide pleurisies etiologically into primary, or those which arise apparently from causes acting exclusively on the pleura, the pleurisy being the main disease, and secondary, or those which occur as a local

manifestation of a general disease or from the extension outward of some lesion of the pulmonary parenchyma. In the case of the peritoneum, as knowledge has extended, primary or idiopathic inflammation has about disappeared from our nosology. In a case of peritonitis not due to direct traumatism we look for some general disease or infection of which it is a local manifestation, or a lesion of some pelvic or abdominal viscus of which it is the extension. The same mental attitude ought to be assumed in all inflammations of the pleura, although much still remains to be discovered in this field. In a recent analysis of one hundred and sixty-three cases of pleurisy, apparently primary, occurring in the Zurich clinic in the course of ten years, Engsten found seventy-one in which no known cause could be found. In twenty-two cases there was phthisis in the family. In thirty-one cases exposure to cold was given as the cause, twenty-nine of them being pleurisy with effusion and two only dry. In many of these cases the pleurisy followed a few hours after a definite exposure to chill. Four cases were attributed to overexertion, one to injury without recognizable lesion of ribs or skin, sixteen had pneumonia, and seventeen pleurisy on previous occasions; two occurred in childbed. An attempt is made by the author to show that these cases occurred in groups, and to deduct from that fact the probable infectious origin of the cases, but his figures are too small to be very convincing.

In the first case reported the author states that the general depression of the patient was altogether out of proportion to the local disease, and that he was really dealing with a general disease of an unknown nature, of which the pleurisy was a local manifestation.

In the second case the prostration is, of course, readily accounted for. Whether or not the pleurisy was a local manifestation of the disease, or an intercurrent complication due to some other cause, the author is not prepared to say.

In the third case,—viz., that of a lady with a history of a cough and emaciation, with a cavity in one lung, and with albumen and casts in the urine,—at first sight pulmonary tuberculosis, the often accompanying chronic nephritis, and a tubercular process seemed only too probable. As the patient, however, regained a relative degree of health in a short time, the probability seemed that the old pulmonary disease was a chronic bronchitis and emphysema, with a bronchiectatic cavity at the left apex, that the kidney-trouble was acute, and that both kidney and pleural lesion were due to some infectious agent, the onset of the disease beginning abruptly with a chill and all passing off in a few weeks, leaving the patient, as far as her pleura and kidneys were concerned, as it found her.

As regards the prognosis of such cases as present the physical signs of pleurisy and nothing more, a number of points are brought out by the author which are well worthy of attention. In 1885, Sir Andrew Clark called attention to the frequency with which fibroid phthisis develops from what in its inception is apparently dry pleurisy, often very latent symptomatically. From the pleura the fibroid process, which is generally unilateral, extends into the pulmonary parenchyma, until the lung is more or less extensively crippled. The desirability of detecting such a case at the onset is too obvious to be insisted upon. It is, perhaps, not probable that any of these cases belonged to that category, as all began, progressed, and departed like acute infectious diseases. While few physicians will to-day question the etiological importance of the tubercle bacillus, it is generally recognized that a predisposition on the part of the patient, consisting either in constitutional or local vulnerability, is essential to the implantation of the disease. A pleura damaged perhaps by just such a latent process as those above cited, and not properly treated, simply because a proper diagnosis has not been made, may prove just such a predisposing cause.

The cases above reported by Dr. Vansantvoord are especially valuable, as drawing attention towards the occurrence of inflammations of the pleura, which are nearly or quite symptomatically latent, and to suggest the importance of their recognition. Diagnosis is often, as in the three cases cited at the beginning of the paper, not difficult, if only the possibility of their occurrence is kept in mind and an intelligent analysis is made of the physical signs noted on repeated examination and of the history of the cases. Such cases come under the observation of the general practitioner rather than of the specialist. Upon him devolves the grave responsibility of diagnosing and treating most diseases in their incipiency. Upon the breadth of his knowledge, the acuteness of his powers of observation, and the soundness of his judgment hangs the fate of the patient, rather than upon the skill of the specialist, who often is consulted only after disease has

progressed beyond remedy. The task, especially of stamping out that great scourge of our race,—pulmonary tuberculosis and its kindred diseases,—devolves upon the great body of the profession. The habit should be more generally cultivated by us all of observing the constitutional tendencies of patients, and even when the disease in question in a given case is trifling, we should systematically look beyond the present disorder and consider what light it sheds upon the patient's future prospects.

FUNCTIONAL DISORDERS OF THE HEART.

At the meeting of the British Medical Association, at Birmingham, on July 29, SIR DYCE DUCKWORTH read a paper with the above title (*Lancet*, August 2, 1890). He said: "Cases illustrating what we commonly term functional disorder of the heart are frequently met with in practice. The whole subject has certainly become better defined for us since the knowledge of cardiac physiology and the due recognition of physical signs relating to the heart have become part of the common knowledge of the profession. The remarks I propose to make shall refer to conditions of cardiac disturbance and of vascular disturbance which can fairly be held distinct from all such as are plainly associated with, if not dependent on, organic diseases of the heart or the great vessels. We apply the term 'functional' here, and I maintain the use of the term as necessitated for clinical practice, *pace* the purists and the physiologists, whom indeed we often have to part company with to meet the claims of the bedside. Our aim as hospital teachers is to make good practitioners, men who can treat and heal the sick. That, I say, is our whole business. Our subject to-day relates to irregular and inordinate action of the heart and blood-vessels. I shall clear the way for this discussion by treating the subject of functional cardio-vascular and rhythmical disturbance in the following order: (*a*) Infrequency; (*b*) intermittency; (*c*) irregularity; (*d*) inordinate frequency (tachycardia); (*e*) inordinate vascular pulsation. Infrequent pulse is not often met with; sometimes it appears as a constitutional peculiarity, not more than thirty or forty beats occurring in the minute. Such infrequency may accompany convalescence from acute diseases. The most marked instances within my own knowledge of the class of cases I now refer to arose apparently as a result of the influence of malarial poison. The results of injuries to the head causing infrequent pulse may be recalled. In the acute cerebral disorders infrequency may suddenly give way to extreme frequency or to irregularity. In any case of infrequency there are no facts, so far as I know, to justify anxiety or a grave prognosis in respect of longevity. I take next intermittent action of the heart, that condition of pulse known as arhythmia. It may be affirmed that irregularity is commonly of graver import than mere intermittency. In any case the gravity is to be determined by careful physical examination of the heart and radial pulses. Habitual intermittency may be compatible with a full term of life and a heart practically sound. Intermittency may pass off temporarily under the stress of an acute illness with pyrexia, and return with the re-establishment of health. The cause of temporary intermittency is not uncommonly irritation set up by dyspepsia. We may speak of two forms of intermittent pulse: (*a*) where the condition is constant, and (*b*) where it is only occasionally induced. If the intermittency be constant, the patient is generally in middle or advancing life. He may be quite aware of any cardiac irregularity, or may subjectively realize the thump of the organ as a more vigorous beat succeeds to the intermission. This condition is not of serious import in the absence of any marked signs of heart-failure or arterial decay, and is compatible with advanced longevity. Intermittency of the pulse is often associated with the gouty habit of body; it may be an abiding condition or only temporary. I am inclined to believe that the gouty habit induces irregularity rather than intermission of cardiac action. The intermissions may be only occasionally present as the result of some dietetic error or dyspeptic condition. By irregular cardiac action is signified irregularity of rhythm and inequality of tension. The pulse is irregular in force and volume. This is sometimes a temporary condition, due to dyspepsia more often than to any other cause, especially flatulent dyspepsia. Emotion may likewise induce this. Prognosis in any case will depend altogether on the textural soundness of the heart. Though occasionally met with in fatty degeneration of the cardiac muscle, it is more often absent than present. The disturbances of the heart's action which depend on a gouty habit of body are very noteworthy. The special significance of palpitation, apart from organic disease,

varies greatly. The patient may or may not be conscious of undue or violent cardiac action. It is either temporary or persistent. Dyspeptic disturbance is often to blame for the temporary form. In the abiding varieties there is commonly profound nervous disorder. In accentuated form, the malady known as Graves's disease presents this as one of its three cardinal symptoms. Dr. Samuel West has noted examples of paroxysmal heart hurry not dependent on any permanent recognizable disease of the heart, though temporarily accompanied by dilatation and murmur. Dr. Bristowe first called attention to cases of this nature, styling them instances of 'recurrent palpitation of extreme rapidity in persons otherwise apparently healthy.' It is probable that under the name palpitation several varieties of cardiac disturbance may have to be differentiated. As antecedents of several of the recorded cases, it is to be noted that rheumatism and syphilis figure, and that undue strain is often the exciting cause of paroxysms. These facts appear to me to justify Dr. West's views in respect of their pathogeny rather than those of Dr. Bristowe. Inordinate vascular pulsation is well recognized as a functional disorder. It is found in the abdominal aorta in conditions of anæmia, and after hemorrhage due to gastric ulcer. I have followed some of these cases—when death has supervened from other causes—to the post-mortem room, and have never found any gross morbid anatomy for them. The conclusion is, therefore, clear that they are dependent on disordered nervous conditions. Hysterical palpitation is a well-marked variety. Emotion, fits of bad temper, and fright are provocative in persons already disposed. The gouty habit of body is certainly a cause. The palpitation may be entirely subjective. Examples of what is termed irritable heart come into this large category. These occur most frequently in young men who take violent exercise and live hard in all ways. Graves's disease is an exquisite example of a cardio-vascular disorder dependent on neurotic influence. Balfour, of Edinburgh, teaches that nervous origin of any case of palpitation may be ascertained by making the patient exert himself. Extra exertion has the effect of subduing the rapid action. With organic lesion (such as fatty change) present, the contrary effect will ensue. In the superficial sketch which I have now presented to you, I have endeavored to consider only such conditions of cardio-vascular disorder as are, for want of a better term, called functional. There is as yet no morbid anatomy for them, yet for many of them the line is apt to be transgressed, and in time there are found changes in the direction of decay by atheroma, fatty degeneration with fatal issue. Have we not here the earlier manifestations of organic disease-changes indeed, but such as may often be recoverable if early detected and wisely treated?"

THE ACTION OF THE SOLUBLE SALTS OF STRONTIUM ON THE ORGANISM.

Dr. J. V. Laborde has taken up the study of the salts of strontium, potassium, and calcium, and reports his results in *La Tribune Médicale* for July 17, 1890. These studies possess considerable importance, especially from the point of view as to the relationship between the toxicity of a metal and its atomic weight, together with their possible applications to the arts and in therapeutics. Commencing with a comparative study of the chloride and lactate of strontium, Dr. Laborde, in the first place, calls attention to their almost perfect innocuousness.

Gmelin, in his studies as to the action of barium, strontium, and chromium on the animal organism, in 1824, deduced from his experiments that strontium and its soluble salts are perfectly harmless, but he selected for his experiments the rabbit, which, as is well known, is almost incapable of vomiting, and thus in this respect is unfavorable for practical deductions from such experiments. Dr. Laborde, on the other hand, pursued his studies principally on the dog, and, in one case, on man, employing intravenous, hypodermic, and intramuscular injections, and introduction into the stomach by means of the œsophageal sound; and he now believes that his results warrant him in stating that the chloride of strontium is absolutely innocuous, he having given it in the dose of 7½ grains to a rabbit weighing only five pounds without producing any appreciable phenomena whatever, even no local disturbance. So, also, in the dog he has given 15 grains of the chloride of strontium directly into the vein without likewise producing any apparent disturbance either of the circulation, respiration, or the digestive functions. So, also, 30 grains of the carbonate of strontium were given daily to a man (?) without producing any discoverable effect.

In comparing the action of the chlorides of

strontium and barium, one would at first expect from their close chemical relationship that there would be a somewhat close analogy between their physiological properties, but Laborde has found that the chloride of barium possesses strong toxicity, while, as we have seen, the chloride of strontium is practically inert. These facts, it should be mentioned, were also noted by Orfila and Gmelin, and, in 1883, Rabuteau likewise noted the same results. Laborde, however, takes exception to the methods of experimentation used by these different observers, although he likewise has found by more careful methods of study that when a solution representing about two grains of the chloride of barium was injected into the external saphenous vein of a dog weighing thirty pounds, the pupil was dilated, the urine abundant, and death was produced by arrest of the respiration, so that Rabuteau's experiments, which attribute death to arrest of the heart, are explainable as due to his method of investigation, and not to the action of the drug.

Laborde, therefore, describes the chloride of barium as a respiratory or medullary poison and not as a cardiac poison. Further, Laborde has noted that, as a result of poisoning with chloride of barium, there is the same arterial hue of the blood preserved as is the case in poisoning by oxide of carbon. Again, in comparing strontium salts with similar salts of potassium, while the former is free from any marked poisonous action, the chloride and sulphate of potassium, as is well known, produce paralysis of sensibility and motion, collapse, and asphyxia, while first producing slowing and finally arrest of the heart. These results follow whether the salts are given intravenously or through the stomach, though in the latter case there are marked gastro-intestinal symptoms, such as diarrhœa and vomiting. Again, Laborde finds that the salts of strontium and calcium are very closely allied in innocuousness, though chloride of calcium may produce vomiting when injected intravenously, a result which never follows the use of the chloride of strontium.

Finally, in comparing the action of the lactate of strontium and potassium, the same results were obtained,—that is, the strontium salts were innocuous, potassium salts poisonous.

Dr. Laborde, however, claims to have noted a result obtained in his experiments which may be of interest for therapeutic applications, and that is that the administration of the lactate of strontium by the stomach to the dog produces marked diuresis. He has not, however, studied the mode of production of this diuretic effect, but promises to contribute later the results of the studies on which he is now engaged, so that the practical result now is that strontium salts are apparently negative in their action as regards any poisonous effects, while lactate of strontium possesses certain properties as a diuretic.

A NEW METHOD OF EXAMINING THE LIVER.

A new method of examining the liver, more especially its lower border, is proposed by GLENARD (*Weekly Medical Review*, August 2, 1890). The patient lies on his back, while the physician, sitting to his right, on the edge of the bed, passes the four fingers of his left hand under the right hypochondrium of the patient, so as to press out the lumbar region, while the thumb, applied more anteriorly, makes gliding motions from below upward. If the patient now makes deep inspirations, the thumb will distinctly feel the lower margin of the liver.

ARTIFICIAL AND NATURAL DIGESTIONS.

The use of artificially-digested foods is every day attracting more and more attention, and we, therefore, reprint the following paper by MR. A. S. LEA (*American Journal of Pharmacy*, August, 1890) as a timely contribution to the subject.

The following factors, present in normal digestion, are absent in artificial digestion experiments as usually performed in flasks and beakers: 1, constant movement of the contents; 2, constant removal of digestive products; 3, continuous additions of fresh portions of digestive fluid. In the present experiments, an apparatus was employed which tends to obviate these disadvantages. The artificial digestion is carried out not in a flask, but in a tube of parchment-paper, kept in constant up-and-down movement by connecting it to a motor; this tube is suspended in a cylindrical glass vessel filled with the same mixture as that contained in the tube, but minus any ferment; an outer cylindrical glass vessel is filled with water, kept at the necessary constant temperature. By this means, two of the more important conditions under which natural digestion

takes place may be imitated,—namely, continuous movement, and removal by dialysis of digestive products.

The first question investigated was the digestion of starch by saliva; the great contrast between natural and artificial digestion of starch is the appearance of large quantities of dextrin in the latter case (opinions, however, differ as to the relative amounts of sugar and dextrin formed), while in the stomach and intestines mere traces of the dextrins are discoverable. Notwithstanding imperfections in the present method of experimentation, which are freely admitted, the contrast between a digestion carried on in the moving dialyser and in a flask is very marked; the iodine reaction of starch or dextrin disappears first in the contents of the dialyser; in prolonged digestions the contents of the dialyser remain clear and more free from putrefactive organisms than those of the flask, and the proportion of dextrin present is less in the dialyser than in the flask. This last point may be illustrated by the following table:

	Duration of experiment in hours.	Strength of starch in solution per cent.	Dextrin per cent. in dialyser.	Maltose per cent. in dialyser.	Maltose per cent. in dialysate.	Dextrin per cent. in flask.	Maltose per cent. in flask.
1.....	6	0.4	7.67	.....	.....	15.23	.....
2.....	22	2.4	8.58	.....	.....	14.16	84.23
3.....	21	4.23	16.78	.....	.....	30.62	61.81
4.....	68	4.23	8.48	.....	.....	35.70	62.33
5.....	18	0.43	10.31	12.42	76.67	.....	.....
6.....	48	4.18	12.61	14.20	71.15	.....	.....
7.....	90	3.35	4.29	3.06	91.18	.....	.....

The conclusions drawn from these and similar experiments are as follows:

When the digestion of starch by saliva is carried out under conditions which insure a very considerable removal of the products (maltose) as they are formed, then,—

1. The *rate* at which the digestion takes place is increased.

2. The total *amount* of starch converted into sugar is much greater, and the residue of dextrin is much less, than under conditions, otherwise similar, when the products are not removed.

3. The influence of the removal of digestion products on the relative amounts of dextrin and maltose formed is least marked when the starch solution is dilute.

4. These results justify the assumption that in the alimentary canal starch is completely converted into sugar before absorption.

5. The experiments afford no evidence that any sugar other than maltose is formed by the action of saliva on starch.

CHLORIDE OF METHYL AS A LOCAL ANÆSTHETIC.

In 1884, Debove first used chloride of methyl in sciatica with brilliant results. Later Vinay, Baily, Tenneson, and Begue employed it as a local anæsthetic in various forms of neuralgia, rheumatic muscular pains, traumatic periostitis, and pains in the joints, while Vidal, Labbe, St. Germain, Pollaillon, Cazin, and Perier have employed it as a local anæsthetic in a large number of minor surgical operations with satisfactory results.

Professor Kusmin, of Moscow (*Centralblatt für Chirurgie*, No. 31, 1890), has recently taken up still further the applicability of chloride of methyl in operations, and concludes from his numerous experiments made on dogs, in which he was not only able to anæsthetize the skin, but also the deeper tissues in the amputation of the leg of a dog, that it was possible by its means to produce anæsthesia which will last from one and a half to two seconds, a time which is quite sufficient for opening abscesses. As the anæsthesia of one and a half to two seconds may be repeated a number of times during the same operation without damage to the tissues, and as not only the skin, but also the muscles, and even the bones, may be made insensible by its employment, chloride of methyl has the great advantage, especially over ether, in that it more readily produces anæsthesia, and does not burn, and may even be administered where the thermo-cautery is employed, and is even capable of producing sufficient anæsthesia to enable major operations, such as amputation.

Dr. Kusmin uses Vincent's apparatus, and directs the stream directly on the part which is to be anæsthetized, or first covers the part which it is desired to render insensible with a little cotton wool, first moistened with chloride of methyl. In the latter case the anæsthesia is slower, not being produced so soon and not being complete before five minutes.

In addition to opening a large number of abscesses, Dr. Kusmin employed the chloride

of methyl in his clinic for the following operations: four cases of phimosis, two cases of strangulated hernia, two cases of atresia, two for cancer of the lip, one for the removal of a dermoid cyst as large as the fist from the head, and one in which glands were excised from the neck. The results were all satisfactory.

SIMULO.

DR. V. PAULET reports a number of cases of hysteria treated with simulo, in which it appeared to have decidedly good effects. He also employed the drug in a case of ovaritis with severe pain, and one of double pregnancy accompanied by nervous palpitations, violent headache, and complete insomnia, and obtained absolute relief in both cases. As regards its use in epilepsy, he does not think that it can supplant the bromides, but that in some cases and under certain conditions, not very well defined as yet, when the bromides seem inefficacious or contraindicated, it may be very useful. In one of his cases also chorea was apparently benefited by simulo.

The alcoholic tincture of the drug is a bad form for administration in epilepsy and hystero-epilepsy, since, if given in any quantity, the alcohol may neutralize the good effects.

As regards the safety of the medicine, he considers it quite innocuous in large doses. It appears to have, he says, no effect on the pulse or respiration; it causes no depression, no mental excitement, and no disorder of digestion.—*American Journal of Insanity*, July, 1890.

SALIPYRIN OR SALICYLATE OF ANTIPYRIN.

In a communication made by M. Vigier to the Paris Pharmaceutical Society, more than a year since, attention was called to the reaction which occurred between antipyrin and sodium salicylate. This reaction has been thoroughly investigated by PROFESSOR SPICA, of Florence, who reports (*L'Orosi*) that the liquefaction of the mixed powders is due not to the formation of salicylate of antipyrin but simply to absorption of moisture from the atmosphere. He also states, however, that he has succeeded in preparing a well-crystallized compound, which he considers a salicylate of antipyrin, and which he thinks may prove of therapeutic value. He obtained the salt by gradually adding to a dilute boiling aqueous solution of antipyrin a molecular proportion of salicylic acid (100 parts of antipyrin to 73.4 of salicylic acid). If the solution be sufficiently dilute it remains clear while boiling, otherwise a yellow, oily substance will separate out, which requires recrystallization from water. The salt is described as occurring in fine colorless crystalline scales, or in flocks formed of very much elongated crystals, the scales tending to group together. These scales are soluble in 25 parts of cold and more soluble in hot water, and freely soluble in alcohol, ether, chloroform, and carbon bisulphide. Since the publication of Professor Spica's observations, Dr. Scholvein has stated that this compound has been already tried in the Berlin hospital under the name of salipyrin with satisfactory results. Dr. Scholvein also suggested, as a simpler method of preparing the compound, that the components be heated together in molecular proportions, and the resulting crust be dissolved in and crystallized from alcohol. It may also be obtained by shaking together an aqueous solution of antipyrin and an ethereal solution of salicylic acid, when the compound separates out in handsome crystals.—*Druggists' Circular and Chemical Gazette*, August, 1890.

TESTS FOR GLYCOSURIA.

According to the Vienna correspondent of the *Medical Press* for August 27, 1890, for some time past the tests for sugar in the urine have been the subject of controversy and investigation, many of which were considered inaccurate and others worthless. A few weeks ago Professor Nothnagel read a letter at the K. K. Gesellschaft der Aerzte, from Dr. Becker, of Cairo, who enclosed him his visiting-card prepared in such a way that if a drop of urine were placed on the card with a match glycosuria could be instantly detected. The professor tried the card test and spoke very highly of the result, after reading the letter to the meeting. Since then the brothers DRS. JOLLES, of the Chemico-Microscopic Laboratory, Vienna, have collected and examined four hundred analyses of saccharine urine with a view to settling the dispute between the claimants for the different sugar tests. In preparing their argument they divide saccharine urine into two different kinds for applying tests. 1. Those where sugar is present but the urine is healthy in every other detail, constituents chemical and physical, which may have sugar present to the extent of .4 to .5 per cent., increasing

or diminishing, but never disappearing. 2. Where both the physical and chemical properties are changed, the specific gravity increased, the color pale yellow, the uric acid reduced and replaced by aceton or acetic acid. In these cases the sugar is usually in very large quantities, but may be modified by therapeutic or dietetic treatment. The tests applied in the laboratory are long, tedious, and impracticable for the bedside.

The visiting-card adopted by Becker, where he has the surface of the card covered with a concentrated solution of cupric sulphate, which evidently forms cupric oxide on the surface of the card on drying, is an excellent and convenient test for practical work. But here is a likely error. The paper in Becker's visiting-card contains a small quantity of potassium in its texture, presumably from the manufacture of the card with potassium carbonate.

This one can easily demonstrate by a drop of phenolphtaline, which produces a red color when a trace of potassium is present. The authors state that they have tested thirty visiting-cards from different provinces, and not a trace of potassium was found in one of them! Such cards, if covered with the cupric solution of vitriol, would prove erroneous for diagnosis. A filter-paper with a resinous soap incorporated might be more reliable for the reaction, which is nothing more than Trommer's test modified. Two conditions are necessary,—sensitiveness and a distinguishing color. The first of these is obtainable, but the second is not reliable. With Becker's test in albuminous acid urine characteristic "browning" has been obtained, where not a trace of glycose was present. Trommer's test at best is worthless, and Dr. Jolles has found cases where this test has been tried for upward of a year, and misled the physician in his diagnosis. Heller's test is also unreliable. Seegen's test, which is a modification of the above, by filtering the urine through carbon to remove the creatins, is not much better. The action of uric acid, oxybutyric acid, etc., disguises the result of Fehling's test, and makes it also unreliable. Another objection is the quantity of glycose present before any of these tests can be applied. In Trommer .32 per cent. is required; Seegen's .20 per cent.; while Heller's requires .48 per cent., a quantity too great for practical diagnosis. According to the writer's judgment there are only two reliable tests known to us at present,—viz., Böttger's bismuth test and Fischer-Jaksch's phenylhydrazin test.

Böttger-Nylander's Test.—The first of these has been recently modified by Nylander with regard to quantity. He prefers 2 of a basic salt of the potassic nitrate of bismuth, 4 of the potassic tartrate of sodium, and 100 of an eight per cent. sodic solution. Of this solution, 1 part is taken to 10 parts of urine, which is boiled one minute, but never exceeding two minutes, when a dark solution will be obtained on cooling from the oxidation of the bismuth. This is a very sensitive test, detecting the presence of .08 per cent. of sugar. It is necessary, however, before applying the test to remove any large quantity of albumen and mucin from the urine, or the presence of the sulphur in those bodies may combine with the bismuth. Another condition is, that the solution must not be boiled too long, or the organic matter in the urine may become black. There are also a few medicines enumerated that falsify the results.

Fischer-Jaksch's Test.—This is a test depending on the formation of a phenylhydrazin glycose, which is deposited in the form of yellow crystals or plates; but brown globules are no proof of the presence of sugar. Six to seven centimetres of urine are taken, to this is added twice as much as will go on the point of a knife—"zwei messerspitzen voll"—of the salt of phenylhydrazin, with three times as much as will lay on the point of a knife of the acetate of sodium, and then heat is applied, but if the salts will not dissolve more water is added. This mixture is placed in boiling water, allowed to remain from twenty to thirty minutes, and then removed to a beaker of cold water, when the yellow crystals or plates of phenylhydrazin glycose will fall to the bottom, and are easily distinguished by the microscope. The chemistry of the test is described as one molecule of phenylhydrazin combining with one of glycose, at the time of cooling giving the formula—

$$C_6H_{12}O_6 + N_2H_3C_6H_5 = C_6H_{12}O_5N_2H_3C_6H_5 + H_2O,$$

which, when further heated, two molecules of phenylhydrazin and osazone are formed in yellow crystals, insoluble in water and slightly soluble in alcohol.

CONDITION OF THE KIDNEYS IN POISONING BY MERCURY.

Some experiments that may prove of interest from a medico-legal, as well as from a clinical, point of view, have been made by a

German observer, F. KLEMPERER, and an abstract of his results is given in the *Centralblatt für Klinische Medicin*, 1890, No. 29. The investigations were made to ascertain the condition of the kidneys in death from poisoning by mercury. The experiments were mostly made on rabbits, and the poison (corrosive sublimate) was introduced into the system by means of hypodermic injections. The mercury was eliminated by the intestines and kidneys. In acute cases, when the amount of mercury was large and death rapid, a considerable amount of congestion was found in the kidneys. If life was prolonged five to ten hours, hemorrhages were found in these organs, chiefly in the parenchyma, and there was also cloudy swelling of the epithelium. If the duration of life was still longer, the parenchyma showed marked signs of inflammation. These were seen to some extent in the tubules of the cortex, but were less obvious there than in the straight tubules; in the latter inflammation quickly led to necrosis. In half the cases there was a deposition of chalk, together with a degenerative parenchymatous inflammation; the former appeared from eighteen to twenty-four hours after death, at first in the casts found in the diseased tubules, and similar deposits occurred later in the straight tubules. Added to the above conditions was generally a slight affection of the glomeruli. When the poisoning became more chronic, the parenchymatous inflammation was less marked. The necrosis of cells in the straight tubules occurred only to a slight extent, and calcification was absent; but in the interstitial tissues the signs of inflammation were abundant. In the kidneys of dogs poisoned by mercury, there was a parenchymatous nephritis, which terminated not in necrosis, but by fatty degeneration of the cells; a deposit of chalk only occurred to a very limited amount. In cases of metallic poisoning the condition of the kidney is very similar in rabbits to that in man, but in the latter fatty degeneration is more common than in the former. The microscopic and macroscopic characters of the kidneys are not so characteristic as to warrant a diagnosis of mercurial poisoning; poisoning by manganese, glycerin, bismuth, all produce much the same appearances, but the deposits of chalk in the inflamed tissues would suggest that mercury was the irritant employed. Professor Kauffmann ascribed all the changes produced by mercury to coagulation in the capillaries, producing indirect anæmia, in the wake of which necrosis and calcification followed. Klemperer, on the other hand, was of the opinion that there was no simple necrosis and no definite form of inflammation produced by the action of mercury, but he attributed the results to a proneness on the part of the cells of the kidney of the rabbit to undergo calcification, while the same irritant produced in the dog a fatty metamorphosis of these cells.—*Lancet*, August 23, 1890.

DELPHINIUM STAPHISAGRIA.

The seeds were analyzed by Charalampi Kara-Stojanow (Inaugural Dissertation, Dorpat). Delphinine and delphisine have the same composition, $C_{31}H_{49}NO_7$; crystallize from their solutions in ether and petroleum benzine, the form of crystals being alike; their melting-points are almost identical (191° and 189° C.). They give no color reactions and dissolve freely in chloroform. Greater differences were observed in their behavior to water, alcohol, ether, and benzol. Delphinine has an acrid and benumbing taste, while the taste of delphisine in alcoholic solution is bitter, a burning sensation being left on the tongue. Delphinoidine is amorphous, melts at 152° C., has a bitter, scarcely acrid taste, is soluble in ether, and yields amorphous salts, which are soluble in water. The mixture of alkaloids insoluble in ether, which has been known as staphisagrine, was found to consist of at least four alkaloids, all of which are amorphous and have a bitter taste. The physiological action of the different alkaloids was determined by Professor Kobert; they do not enlarge the pupil, but otherwise resemble aconitine in their action, though decidedly weaker than the latter alkaloid, and differing more or less among themselves. The closest relation to aconite is shown by delphinine, but the lethal dose for cats and dogs is 1.5 ($\frac{1}{40}$ grain) and .5 milligramme respectively for the two crystalline delphinium alkaloids. Delphinoidine has a more decided narcotic action, the lethal dose being 5 milligrammes.—*American Journal of Pharmacy*, August, 1890.

THE TREATMENT OF WHOOPING-COUGH BY BROMOFORM.

Bromoform, $CHBr_3$, is a colorless liquid, boiling at 151° C. and solidifying at 2.5° C. Its specific gravity is 2.83 at 0° C. It is produced by the action of bromine upon alcohol

n the presence of an alkali. In practice, ilk of lime is saturated with bromine, al-ohol added, and the mixture distilled. In 1849, Nunneley and Schuchard called atten-ion to bromoform as a possible anæsthetic, nd in 1869, Rabuteau brought the drug for-ard as a new anæsthetic.

Given to the lower animals by inhalation or hypodermic injection, bromoform produces rapid narcosis, in which, according to the researches of Von Horoch, the breathing is not noticeably lessened, and the pulse remains full, regular, and strong. Although the blood-pressure is distinctly reduced, the heart is said not to suffer from the influence of the drug, and the peripheral vagi are not affected. Further, as powerful irritation of a sensory nerve has no influence upon the blood-pressure, it is probable that the fall is the result of vaso-motor paralysis, which is confirmed by the rapid sinking of the temperature.

The excitability of the cerebral psycho-motor centres and the general reflexes are entirely destroyed. Von Horoch has used the bromoform as an anæsthetic in several cases in man. The most marked symptom was excessive cyanosis of the face. The urine passed after recovery contained bromine.

More recently Dr. Stepp, of Nuremberg, as published in a recent number of the GAZETTE, applied bromoform successfully in the treatment of whooping-cough, and still more recently Professor Senator, through his assistant, Dr. Löwenthal, of Berlin, published an article heartily endorsing Dr. Stepp's treatment and recommending its further use, promising to again publish his results.

He noticed in some cases a decided benefit as early as the second day of treatment: in others on the third or fourth day, depending on the severity of the case.

Vomiting disappeared in the first week of the bromoform treatment. Bronchitis, complicating tussis convulsiva, seemed to be benefited also during the course of the treatment. In from two to four weeks children were usually discharged cured. Appetite also was better during the course of treatment. Children with previous morbilli, also delicate ones, experienced equally beneficial results. Some cases had the treatment interrupted by a complication setting in,—*e.g.*, morbilli, pneumonia, or varicella. Relapses occurred where bromoform was not administered long enough; in some cases sleepiness was observed during the course of treatment. In a case where a toxic dose of $CHBr_3$ was given, the following symptoms were noted: Contracted, pin-point pupils; small, compressible pulse; pale countenance; cornea not reacting; on auscultation long deep inspiration; hardly any expiration was noticed; the heart-sounds were scarcely perceptible. The child reacted immediately on giving a hypodermic injection of sulphuric ether.

In the *Medical Record* for September 6, 1890, DR. LOUIS FISCHER reports sixteen cases of children treated in the German Polyclinic of New York, the majority of whom were, as a rule, poorly nourished subjects, living in tenements, in badly-ventilated rooms, and in all respects under the least favorable conditions of hygiene. In all of these cases, nevertheless, the most marked improvement and rapid cure is said to have followed the use of bromoform. The doses which he administered were the following:

For children under and up to 1 year of age, 2 to 3 drops three times a day. Children from 2 to 4 years of age, 3 to 4 drops three or four times a day, depending upon the severity of the case. Children up to 8 years of age, 4 to 6 drops three or four times a day. The doses were usually increased on the third day, and in very severe cases on the second day, by adding one drop to a single dose. The time required for a cure was variable, in some cases ten days being enough to effect a cure, while others required almost four weeks.

This remedy may be given in a small teaspoonful of water; but, as from its weight, it sinks to the bottom of the spoon, care must be taken to see that the child swallows the bromoform and that it does not remain in the spoon. As a rule, no difficulty will be experienced in giving it to children, as bromoform has a pleasant taste and is readily taken. If the bromoform turns brown, it contains free bromine, and should then not be administered.

CETRARIN.

In a paper read before the Pharmacological Section of the Berlin Congress (*Pharm. Zeit.*, August 13, p. 504), PROFESSOR KOBERT contradicted the prevalent opinion that cetrarin, the bitter principle in Iceland moss, increases the blood-pressure. From experiments on animals he found that its action is to excite movements in the stomach and intestines, while in too large doses it is anti-

peristaltic. Its beneficial influence upon patients affected with chronic constipation has also been observed by Professor Kobert. A further effect of cetrarin is stated to be the numerical increase of both red and white blood-corpuscles in the human blood, especially if their number has been abnormally diminished through sickness; and, finally, in small doses it acts as a mild stimulant upon the central organs of the nervous system. Its use appears, therefore, to be indicated in the case of chlorotics suffering from loss of appetite, constipation, and languor, the dose recommended by Professor Kobert being .1 gramme (1½ grains).—*Pharmaceutical Journal and Transactions*, August 30, 1890.

SALOL IN CHOLERA.

During the year 1889 six hundred and twelve cases of cholera occurred in the suburbs of Hyderabad, eighty-eight of which came under the treatment of Dr. Patrick Hehir. Of these, seventy-seven took place up to the end of August, and eleven after that date. In the former set of cases, the perchloride of mercury treatment was adopted, with thirty-nine deaths,—a mortality of 44.7 per cent.,—or much the same as that anticipated from any system of expectant treatment.

Happening to come across Professor Löwenthal's investigations in connection with the germicidal properties of salol on the comma bacillus of Koch in the presence of pancreatic juice, in July, as cholera was prevalent at the time, Dr. Hehir determined to put his suggestions to practical test, and he reports his results in the *Indian Medical Gazette*, No. 5, 1880.

On the 1st of August all cases admitted into the cholera hospital were treated with it. 10 grains were given to each patient every two hours, with 15 minims of spirit of chloroform; the maximum quantity given to any one case was 90 grains and the minimum 40 grains. Every case so treated recovered. The drug did not appear to produce any immediate influence, all the urgent symptoms gradually abating. Two effects, however, are stated to have been manifest,—a shortening of the period of convalescence and an absence of symptoms of uræmia.

The general effect appeared to be to prevent transudation into the alimentary canal; in fact, after a few doses the patients drank with avidity, and began to retain all the nourishing fluids administered to them. Under the influence of this increased quantity of liquid in the circulation the heart's action gained in vigor, the pulse returned, the temperature rose, the cyanosed aspect and shrunken features disappeared, and reaction was accelerated.

Dr. Hehir admits that as his cases were in the final stages of the epidemic, and as it is a well-recognized fact that the last cases of an expiring epidemic are of less severity, it is also to be expected that the mortality would be lower than if the cases had occurred in the early stage of the outbreak or when it was at its acme.

That salol is not a specific for cholera, which Dr. Hehir's results would seem to indicate, is proved by the further report, in the same number of the *Indian Medical Gazette*, of four other cases of cholera treated by salol, in all of which death took place.

ESTABLISHING TOLERANCE FOR THE TUBERCLE BACILLUS.

In the *Medical News* for October 19, 1890, Dr. Samuel G. Dixon advanced the idea that to overcome infection by tuberculosis, it would probably be necessary to produce a tolerance to the action of the tubercle bacillus, and he then advanced the following hypotheses:

First.—It is possible that, by a thorough filtering out of bacilli from tubercular material, a filtrate might be obtained and attenuated, so that by systematic inoculations a change might be produced in living animal tissues that would enable them to resist virulent tubercle bacilli.

Second.—To bring about a chemical or physical change in living tissues that would resist tubercular phthisis, it is possible that inoculations with the bacillus would have to be made; yet, before this could be done, the power of the virulent bacilli would have to be diminished, otherwise the result would be disastrous.

Dr. Dixon also stated that he had obtained success in preventing subsequent susceptibility to phthisis by inoculating animals with what he believed to be an unusual form of the tubercle bacillus, and that he had succeeded in producing a marked morphological change in this bacillus by subjecting it to different degrees of moisture, temperature, and changes in food-stuff.

It is quite impossible to state how this im-

munity was produced; yet it is quite possible that the organisms in the changed forms have not sufficient vitality to live in the animal economy, and therefore the only active portion of the matter injected is a chemical product carried in with the bacilli, and which is poisonous to the ordinary tubercle bacillus. Or, again, it is possible that the organisms themselves are antagonistic to the bacillus of Koch. It is also possible that this unusual form of bacillus produces, when in the animal economy, that which kills the tubercle bacillus. Or we can believe it possible for this new form to consume that from the animal tissues necessary for the existence of the tubercle bacillus, and by a different metabolic process to form a product non-poisonous to animal life.

From the fact that we all inhale tubercle bacilli daily without contracting phthisis, except in odd cases where there is a predisposition or where a great number of bacilli are taken into the system, we are inclined to believe that a change, either chemical or otherwise, must take place in the normal tissues before we can contract the disease. If this be so, we must aim at correcting that change, and it seems within the range of possibilities that such a correction might be brought about by a chemical substance or by stimulating the tissues by micro-organisms, harmless in themselves either through their degree of vitality or their kind.

In the *Medical and Surgical Reporter* for August 6, 1890, Dr. Dixon publishes an additional article on this subject, in which he states that he has continued his researches as regards inoculations against tuberculosis, and that he has succeeded in a number of series of inoculations of prepared virus in guinea-pigs, rabbits, and opossums, after which they had resisted matters so virulent that all animals not previously inoculated by the changed virus acquired tuberculosis when inoculated with it.

On another page of this number we publish an account of the address delivered by Dr. Robert Koch at the recent meeting of the International Medical Congress in Berlin, in which he states that he has discovered a method by which animals ordinarily very susceptible to contract tuberculosis from inoculation of the bacillus are made capable of resisting such inoculations.

Drs. Grancher and Martin, of Paris, likewise claim that they have devised a method by which similar results could be obtained. It should be noted, however, that Dr. Dixon is entitled to the priority in producing immunity to tuberculosis.

LOCALIZATION AS AN AID TO DIAGNOSIS AND TREATMENT OF SOME FORMS OF HEADACHE.

At the fifty-eighth annual meeting of the British Medical Association, recently held in Birmingham, England, Dr. Hewetson read a paper on this subject before the Section in Medicine and Therapeutics (*New York Medical Record*, September 6, 1890).

The author mentioned that for the past fifteen years he had been working upon the subject of the localization of head-pains. In 1884 he had noticed that astigmatism was a frequent cause of localized headache, and similarly he had begun to observe that each cause of pain seemed to have its locality in the cranium. Megrims, for instance, was often curable by getting the patient to make use of converging lenses. It was his observation that in numbers of cases where headache existed there was very little defect of vision present. For instance, a clergyman, who had passed with high honors in Oxford, recently consulted him for headache, and he found that this gentleman was highly hypermetropic. He had suffered much from headache, and had been treated by all sorts of drugs. A suitable pair of spectacles, continually worn, cured the patient. The brother of this gentleman also suffered from extreme hypermetropia, and was very neurotic in character. It was, the author maintained, very important to recognize defective vision as a cause of headache in childhood, for, if this were not done, the patient might suffer terribly in after-life from all kinds of ill-health. Some patients with defective vision suffered much from insomnia. In other cases, headache was due to diseases of the teeth, even when the patient suffered in no way from toothache. The regions where pain was most notable in astigmatism were the frontal region, the top of the head, and the temporal fossa. This did not resemble the vertical headache noticed in anæmia. There was nearly constant pain, accompanied by sick headache. The spot in the temporal fossa was just at the outer part of the brow. In the case of decayed upper molars in a patient with two quiescent carious upper molars, the pain was localized in the frontal region. Decayed lower molars exhibited similar painful spots at the extremity of the eyebrow.

When there were blows on the cornea, with pieces of coal or iron, the head-pain was localized in the back of the neck. It was curious that myopia did not give much pain in the head. Hypermetropia caused far more. The spasm of a microscopical eye ("accommodation spasm") caused pain in the back of the head. In this case there was temporary astigmatism. It was, then, the astigmatic eye on the one hand and the hypermetropic eye on the other which were apt to be accompanied by constant headache. In one case of epilepsy and dizziness he had quite cured his patient by means of suitable lenses.

DR. DRUMMOND, of Newcastle, had for some time recognized that a large number of headaches were due to defects in vision, but the results of treatment based upon this experience had not been quite so satisfactory as he had expected. Perhaps the reason of this was that the spectacles had not been worn continuously by the patients, and he supposed that they should be worn constantly. Myopia did not produce headache so frequently as astigmatism did, or as hypermetropia. The headache of influenza was noticeable. It was all over the head, and the scalp was tender. Chloride ammonium was a wonderful remedy in these cases. There was one point which must be mentioned, and that was that we must recognize a neurotic condition in almost all headaches. For instance, patients with carious teeth might be entirely free from such headaches in some instances; whereas, in others, caries would cause great and terrible suffering.

DR. TYSON, of Folkestone, said that he had seen many cases of frontal headache associated with myopia and with astigmatism. A member said that, as symptoms of a neurotic condition, it was well to examine the carotid arteries and their pulsation. In cases of neurasthenia there was a tuberosity of the carotid vessels, and the vessels were too round and had certain other peculiarities in such patients. There were also certain muscular symptoms of neurasthenia. After a fagging night a person might be called "seedy." This referred to a dark coloration around the orbit, and to slight dropsical effusion under the sclerotic. It would be interesting, he said, if oculists would inform the profession how many of their patients with hypermetropia and astigmatism suffered from headache. He said this because there was probably some other factor in the production of the headache besides the eye-trouble, just as in the case of caries of the teeth, which caused so much agony in certain persons and so little pain in others, sometimes all the teeth might be carious and no pain exist.

DR. JONES, of Southampton, would like to hear what effect the condition of the muscles of the eyeball had upon the production of headache. In his own experience myopic astigmatism was often accompanied by the severest form of headache. The continued use of glasses was of the greatest service in such cases. One difficulty he had found in getting such patients to wear glasses habitually was, that the patient did not see well when walking about, and was, therefore, unwilling to wear them until he gradually became accustomed to them, when he no longer felt afraid of them.

DR. HEWETSON, in reply, pointed to some other diagrams, which referred to frontal pain of nasal stenosis. This frontal pain was often accompanied by pain along the nose. This condition of the nostrils was often of the gravest importance to the health of children. Such patients were the so-called "mouth-breathers," who were incapable of breathing for a longer period than about twenty seconds through the nostrils. He referred to Dr. Lauder Brunton's localization of headache as connected with the teeth and eyes. That author localized the first class of pains in the temporal region, and the latter class in the occipital region. He repeated what he had said at Glasgow, that the slight cases were by far the most troublesome, and caused the most mischief, because they were unrecognized. There were also the cases which were fitted with improper glasses. For instance, he had not unfrequently seen patients who, being myopic, had been using plus glasses prescribed for them by vendors of glasses. General neuroses were, far oftener than was supposed, due to optical defects. Myopic astigmatism was certainly a frequent cause of headache and vertigo, and even might go so far as to cause attacks of *petit mal.*

INOCULATION A PROTECTION AGAINST TUBERCULOSIS.

The Paris correspondent of the *Lancet* for August 30, 1890, states that MM. GRANCHER and MARTIN have been engaged for the last two years in prosecuting inquiries and making experimental researches with a view of ascertaining whether or not it may be possible to

procure immunity from the danger of tubercular infection—or at least to place the system in a condition of resistance similar to that in which the previously vaccinated are in regard to small-pox, and in the case where the infection may be already an accomplished fact, to stem the inroads of the disease—by the inoculation of attenuated tubercular virus, as is now done in hydrophobia by the inoculation of weakened virus of rabies. The publicity given by Koch at the recent Congress in Berlin to his researches in the same direction has prompted the French observers to make known the results so far obtained by them in the same field of inquiry. The animal they selected for experimental purposes was the rabbit, and the method of inoculation adopted was the intravenous one, on account of the certainty with which this method sets up acute and fatal tuberculosis, with constant and well-marked lesions of the liver, spleen, and lungs. The disease thus brought about being always mortal, the observers were enabled to appreciate with tolerable precision the positive or negative results of their succeeding experiments. A tubercular culture was prepared from the spinal cords of these animals dead of tuberculosis, and attenuated after the manner adopted by Pasteur in his manipulation of rabic virus, the several preparations being numbered according to the degree of their intensity. Then, by taking healthy animals, beginning with the weakest injections and gradually going on to the stronger, it was found that after a time the animals developed a power of resistance which varied among different ones, but in most was of a kind to repel fatal infection from a virus so lethal that fresh animals inoculated with it succumbed in a short time to what was proved post mortem to be tuberculosis. For instance, seven rabbits were inoculated on December 31, 1889, with an extremely virulent preparation. Of these, one had not undergone any previous inoculation with the attenuated virus, and it died twenty-three days afterwards of the communicated disease. Five of those which had been subjected to, and thus protected by, anterior inoculations, lived 126, 176, 176, 184, and 189 days, respectively. As to the sixth, it is even now living, 229 days after the operation. In conclusion, MM. Grancher and Martin claim to have proved that, on the one hand, it is possible by inoculation to evoke in the animal economy a prolonged resistance to the most rapid and fatal form of communicated tuberculosis, and, on the other, to confer against infection by this disease an immunity, the duration of which, however, remains to be determined. They add that the results obtained by Koch on guinea-pigs, having been achieved by methods somewhat different, give ground for hope that the day is not far distant when we shall have at our disposal more than one way of effectually combating the tubercular bacillus.

THE USE OF HYPODERMIC INJECTIONS OF CAFFEINE IN THE TREATMENT OF POST-PARTUM HEMORRHAGE.

DR. MISRACHI highly recommends the use of injections of caffeine in cases of post-partum hemorrhages where rapid assistance is necessary, and especially when the physician first reaches the cases after there has been already considerable hemorrhage (*Centralblatt für Gynäkologie*, No. 27, 1890). Especially in country practice this remedy may be of great value, particularly as it is possible for the physician to have under his care cases of diphtheria or erysipelas, and to have been unable to produce such complete disinfection as would warrant the insertion of the hand. According to the author, caffeine acts more rapidly than ergot, and produces a more effective result even than ether, although the latter is a more rapid stimulant. He administered it in the form of a solution, of which a hypodermic syringeful would contain four grains of caffeine, and gave three or four injections at once,—in other words, injects hypodermically about sixteen grains of caffeine. He employs caffeine, rendered soluble by the benzoate of sodium, equal parts of each being dissolved in warm water. The author claims that this remedy so employed produces most remarkable results in arresting bleeding and in acting as a stimulant, and that, therefore, benzoate of sodium and caffeine in small packets should always be carried by country practitioners.

TRIONAL AND TETRONAL.

It will be remembered that a few months since (*Pharm. Journ.* (3), XX. p. 161) Messrs. Baumann and Kast published the results of a number of experiments made upon dogs with compounds allied to sulphonal, from which they drew the conclusions that the hypnotic action of this class is a function of the ethyl groups in the compound, and proportionate in intensity to their number, and that the SO_2 group exercises no influence in this direction. MESSRS. BARTH and RUMPEL have attempted

to ascertain how far this statement is confirmed by the effects produced upon human patients by the administration of trional and tetronal, containing three and four ethyl groups, respectively, as compared with those produced by sulphonal, which contain two (*Deutsche Medicinische Wochenschrift*, August 7, p. 32). In order to make the comparison as close as possible, the experiments with trional and tetronal were made upon patients that had already taken sulphonal with advantage. The results obtained corresponded to the experience obtained upon dogs only so far as to show that both trional and tetronal possess pronounced hypnotic properties when administered to human beings; but they did not confirm the theory as to their quantitative action, as practically the same doses of the new compounds as of sulphonal were found to be required to produce a certain effect, instead of one-half or two-thirds, as expected. In a few cases where sulphonal was slow in its action, trional or tetronal produced a full hypnotic effect; but it was remarked that when any one of the three compounds had been administered several days in succession, a change to one of the others almost always intensified the action. At present, Messrs. Barth and Rumpel content themselves with saying that probably the indications for the use of trional and tetronal correspond with those for the use of sulphonal, but that in certain nervous conditions which are refractory towards sulphonal, the other compounds might prove more effective. Neither trional nor tetronal produced any perceptible effect upon the outbreak or course of delirium alcoholicum even when given to the extent of 4 grammes (60 grains) daily. As a hypnotic, tetronal was in fourteen cases superior to sulphonal, in six cases equal, and in four cases inferior. Trional in seventeen cases was superior, in six cases equal, and in seven inferior. No injurious by-effects were observed in any of the two hundred and twenty cases in which trional and tetronal were administered.—*Pharmaceutical Journal and Transactions*, August 30, 1890.

THE APPLICATION OF ELECTRICAL ENDOSMOSIS IN THE TREATMENT OF GOUTY CONCRETIONS.

Having ascertained that gouty concretions are in many cases medically treated with the aid of lithium salts taken internally, with the object of causing urate of lithium to be formed, dissolved, and excreted from the body, and being also informed that the difficulty met with in the treatment was in insuring that the salts so administered should be absorbed into the system, it occurred to Mr. Thomas A. Edison that more rapid success might be obtained if the application were made externally, employing the well-known principle of electrical endosmosis to carry the lithium into the tissues. This method of operation appears to offer considerable hope of success, since the lithium would be brought into the neighborhood of the concretions, and would thus be more likely to act promptly and effectively.

Electrical endosmose, as the name implies, is that property of an electrical current passing through a porous diaphragm between two solutions, in virtue of which one solution is mechanically transferred across the barrier. The current seems, in fact, to accelerate the diffusion which always takes place between solutions separated by a porous diaphragm, and at the same time acts in one direction, the solution being carried from the positive to the negative pole, from the anode to the cathode. A full description of the phenomenon is given in Wiedemann's "Die Lehre von der Elektricität."

To test the possibility of causing lithium salts to pass in this way through an animal membrane, Mr. Edison made a number of experiments, the results of which he presented to the International Medical Congress at Berlin (*British Medical Journal*, August 16, 1890).

A glass funnel of 7.5 centimetres diameter at aperture was closed by a piece of sheep-bladder .012 centimetres thick, thus providing a porous diaphragm of forty-four square centimetres area. This funnel was inverted and filled with slightly acidulated water, and a platinum wire passing down the tube formed the negative electrode. The whole was then immersed about one centimetre below the surface of a two and a half per cent. solution of LiO_2 contained in an evaporating-dish above the bottom of which it was supported about 1.25 centimetres. Immediately after immersion, a second platinum wire forming the positive electrode was dipped in the dish, and a current of one hundred and fifty milliampères sustained steadily through the apparatus for seventy-five minutes. The funnel was then removed and emptied. Its contents were mixed with a solution of $NaPO_3$, and the mixture evaporated to dryness. The residue was then treated with water to dissolve the sodium

salt and then left for twelve hours. The final precipitate was found to contain .5 gramme of $LiPO_3$.

The experiment was then repeated under precisely similar conditions except that no current was passed through the apparatus, and diffusion only could be active in transferring the salt. The analysis in this case showed that .3 gramme of lithium phosphate was present, from which it was presumed that in the previous instance the current had increased the diffusion transfer to the extent of sixty-seven per cent.

Finding the experiment succeed with a membrane, Mr. Edison next tried whether a healthy man, after being subjected to such a course of treatment as a patient suffering from concretions might be expected to undergo, would not give indications of the absorption of lithium in his excretions. In October, 1889, J. D., an active, healthy laborer, aged 20, and of one hundred and forty pounds weight, was operated upon in his laboratory. He sat in a chair, and kept his hands immersed to the wrists in glass jars, one containing a solution of two per cent. lithium chloride with a platinum electrode, and the other containing a solution of common salt with the negative electrode. The current passed through him was four milliampères, which was as much as he could conveniently stand. This treatment was continued for about two hours daily during one week, the total time of application amounting to eleven hours. His urine was collected during that week, and tests were then applied to it. Using a particular spectroscope and method, it was found that a solution containing $\frac{1}{40000}$ part by weight of LiCl in water was just detectable by a faint red band in the spectrum. No such band could under these circumstances be discerned from the urine itself, but a condensation of all the week's urine reduced to the form of chloride gave a distinct band. An evaporation of two-fifths of the total quantity of this liquid yielded on analysis .22 gramme of lithium chloride, and it was, therefore, presumed that the whole amount of salt excreted was .55 gramme, corresponding to .09 gramme of metallic lithium, or equivalent to the removal of 2.43 grammes of uric acid.

Mr. Edison next tried the application of the method to a patient suffering from an acute and typical form of the malady, in December, 1889. This person volunteered to try the effect of the method. He was 73 years of age, and had lived an active, healthy life until ten years previously, at which time, according to his own statement, he contracted the disease through sleeping in damp sheets. Concretions commencing, continued to increase slowly until they assumed large proportions. All the joints except the knees were much enlarged by atheromatous concretions. A certain degree of venous congestion was visible in his face, and incessant pain had supervened in various parts of the body during the last few months, apparently from the pressure of the calculi upon the nerves. The joints of the fingers were almost obliterated by concretion.

The girth of the little finger of the left hand was by careful measurement 8.6 centimetres, that of the corresponding finger on the right hand even greater. There was great weakness and difficulty in walking, but the mind was clear and intelligence unimpaired.

Treatment was commenced in the manner above described. The current generated from the laboratory 120-volt dynamo, passed through about five thousand ohms resistance, and entered a jar containing an aqueous solution of lithium chloride, density 1.08, in which the patient immersed his left hand up to the wrist. His right hand was similarly immersed in a solution of common salt. The current, after passing through his body, left the latter jar by a negative electrode. It was found that he could stand twenty milliampères without inconvenience, and this strength of current was steadily applied for six days during four hours daily. At the end of that time the girth of the left hand little finger was distinctly reduced to 8.2 centimetres; the patient also experienced freedom from pain after the first day's treatment. He continued the treatment for two days more during the week following, and then the journey to and from the laboratory exhausted his strength. The finger girth after fourteen days from the date of commencing treatment was eight centimetres, a total reduction of .6 centimetres. This was estimated to represent a reduction of three cubic centimetres of concretion on this particular finger, whose form facilitated accurate measurement. His general condition, beyond the weakness resulting from unaccustomed journeying, was temporarily ameliorated.

From these experiments it seems fair to conclude that satisfactory use can be made of the principle of electrical endosmose in such cases.

It should be mentioned that lithia was first tried in the bath solution, and given up on account of its caustic effects. Even an aqueous solution of one per cent. of lithia was found to blister the hands after some continued immersion. It would, therefore, have been necessary to employ a very weak solution had its use been retained, with a correspondingly lengthened course of treatment, which time did not allow of. The chloride was used in the expectation that it would be decomposed within the cuticle during the act of endosmose by electrolytic action, or that failing this it would enter into a direct combination with the uric acid.

SULPHAMINOL AS AN ANTISEPTIC.

Sulphaminol — thiooxydiphenylamine — is formed in exposing the salts of oxydiphenylamine dissolved in water to the influence of sulphur. The product obtained in this manner is a yellow powder, odorless and without taste, and readily dissolves in alkalies, and more difficultly in alkaline carbonates. It is readily soluble in alcohol and acetic acid, forming yellow salts. Exposed to heat, sulphaminol fuses at 155° C.

In contact with animal liquids, sulphaminol splits up into its two components, sulphur and phenol. As these two products possess marked antiseptic power, it is natural to suppose that sulphaminol should be suitable for medicinal use as a substitute for iodoform, without any of the disadvantages of the latter. Sulphaminol is excreted by the urine and transmitted back again into the oxydiphenylamine.

Professor Kobert has subjected sulphaminol to pharmacological experiments, which prove that it is perfectly innocuous (*Journal de Médecine*, September 7, 1890). He has found that 15 grains for every two pounds of body-weight of an animal may be given subcutaneously without any ill effect, no symptoms of poisoning or suppuration being produced, while even the appetite remains unaffected. So also sulphaminol is without poisonous properties to man.

Sulphaminol has been too recently discovered to permit of the formation of an opinion as to its therapeutic value.

Dr. Schmidt, of Frankfort, has tested it in his laryngological practice, especially in cases of suppuration in the maxillary sinus, where its employment rapidly does away with the odor which accompanies this affection.

THE PHYSIOLOGICAL ACTION OF COLCHICINE.

It was only in 1886 that the alkaloid colchicine was first obtained in a crystalline form by Houde and Zeissl independently; the drug prepared by Zeissl consisted of a combination between the alkaloid and chloroform, the latter playing the part of water of crystallization. Dr. C. Jacobi has recently published an elaborate essay on the pharmacological properties of the colchicum alkaloid, and his results are published in *Schmidt's Jahrbücher* for September 15, 1890.

He notes that about two or three hours elapses after the subcutaneous and intravenous injection of this alkaloid in warm-blooded animals before the symptoms of general poisoning appeared. In a dog and cat these symptoms first consist of nausea, and more or less vomiting and diarrhœa. Alterations in the motility, taking on the form of ascending central paralysis, soon appear and are shortly followed by disturbance of the digestive organs. When the paralysis has reached the anterior extremities, disturbance of respiration, which before then had not been affected, now appears. The respiratory movements become greatly increased in power and markedly decreased in number, until death is finally produced by arrest of respiration. In rare cases, immediately before death, convulsions occur, which are attributable to asphyxia. The heart remains beating for twenty minutes after breathing has been arrested.

On post-mortem examination there is found numerous ecchymoses and hemorrhages in the stomach and large intestine in animals in which the gastric disturbances have been most violent.

The most important result noted, however, by Jacobi is that in an absolutely pure condition colchicine is apparently inert in the frog, and it is only in mammals that it commences to act when the colorless crystalline product is transformed into a brown amorphous oxidation product, which Jacobi terms oxydicolchicine.

In the frog, $\frac{1}{15}$ grain of this product produces convulsions within half an hour, and in the frog also death results from general paralysis. Jacobi succeeded in producing this oxydicolchicine artificially through the influence of nascent oxygen on colchicine. He has found that colchicine, employed in arterial circulation experiments on an excised kidney, under the influence of the living tissue is likewise transformed into oxydicolchicine; and he has determined from experi-

ments made on separate organs that the direct action of colchicine—that is, oxydicolchicine—on the circulatory system cannot be the primary cause of death. In the frog, in doses of ⅙ grain, oxydicolchicine produces results similar to those which follow the administration of veratrine, while on warm-blooded animals colchicine oxidization produces both the same qualitative and quantitative results. First there is an irritation of the intestinal wall through stimulation of the nervous organs controlling peristalsis, and this state of stimulation finally is followed by a more or less violent gastro-enteritis; then disturbances of sensibility and alterations in the muscular functions occur, and as a consequence of ascending paralysis of the spinal cord, which finally reaches the motor centres of the medulla, death is produced by the ablation of the function of the respiratory centre.

VALUE OF THE DIAZO-REACTION.

Dr. L. Rütimeyer, who has made between two and three thousand trials of the so-called diazo-reaction of urine from two hundred and sixty patients, declares his belief that it is a very useful guide both in diagnosis and prognosis, being especially valuable in phthisis and typhoid fever. In phthisis he regards it as denoting absorption of caseous matter, and, when it is persistent, as implying rapid mischief and an early and fatal termination. In cases of general miliary tuberculosis it was always obtained. The number of typhoid cases which were examined was eleven hundred and thirty, of which eighty-seven were fatal. The presence of the reaction is very constant, and it can generally be obtained early. It does not seem to be present in pyrexial intestinal catarrh. If the reaction is not obtained during the first or second week, the case, if one of typhoid at all, must be a very slight one. It cannot, however, be affirmed that a well-marked and constant diazo-reaction is any sign of a fatal termination, as with phthisis. The reaction is never given by the urine of healthy persons, and was not observed in hysteria, myelitis, hepatitis, diabetes, cystitis, pyelonephritis, benign ovarian cysts, cholelithiasis with jaundice, gastro-abdominal catarrh with fever, or in a number of surgical diseases. It was occasionally present in cancer of the stomach and œsophagus, chronic nephritis, caries of bone, cold abscesses, pyæmia, scarlatina, pleurisy with serous effusion, tubercular meningitis, and heart-diseases. It was more frequently obtained in croupous pneumonia, actinomycosis of the lung, and malignant diseases of the peritoneum. The method of testing is very simple, two special solutions only being required, a concentrated solution of sulphanilic acid in water and a solution of nitrate of sodium of the strength of 1 in 200. The actual test solution is prepared immediately before use by mixing 200 parts of the sulphanilic acid solution with 10 of pure hydrochloric acid and 6 of the nitrite of sodium solution. This mixture is added to an equal volume of the urine, and sufficient ammonia added to render the whole alkaline. A bright or carmine-red coloration denotes the diazo-reaction. After from twelve to thirty-six hours a deposit occurs, the upper part of which is green or black.—*Lancet*, August 23, 1890.

CREOSOTE IN PHTHISIS.

In a recent number of the *Virginia Medical Monthly* the editor traces the history of the treatment of phthisis by beechwood creosote, and gives the formulæ and experiences of many distinguished physicians with the drug.

He quotes Bouchard and Gimbert (to whom belong the credit of rescuing the creosote treatment of phthisis from oblivion, after its discovery by Reichenbach, early in the nineteenth century), and suggests that 6 or 7 drops is the average daily dose, to be increased if easily tolerated. The most suitable formula is stated to be the following:

℞ Creosote, ♏xxxi;
Tincture of gentian, ♏lxxii;
Alcohol, ʒx;
Tokay or Malaga wine, ʒv. M.
Dose.—From ʒi to ʒss.

The remarkable case of Dr. P. Bogdanovitch, who suffered from pulmonary and laryngeal phthisis, is given. For two years he took ½ grain four or five times a day without effect. "He then commenced with 4 grains daily, and increased the quantity within two months to 44 grains in twenty-four hours. The results were speedy amelioration of the cough and dyspepsia, diminution of sputum, and disappearance of fever and laryngeal spasm. The bacilli remained just as numerous as at the beginning of the treatment. He infers that 5 grains should be taken four times a day, in capsules, after food."

This heroic Russian method would hardly be adapted to the average invalid's stomach in these latitudes. Even Dr. Bogdanovitch ex-

perienced epigastric discomfort after taking small doses on an empty stomach. This symptom did not occur when over 12 grains were taken after meals. If, however, 12 grains were taken at a single dose, or 20 grains within an hour, Dr. Bogdanovitch suffered from giddiness, cardiac palpitation, weak pulse, asthenia, pallor, and anxiety. All of these toxic symptoms disappeared within an hour, and did not return.

The writer's experience with creosote in phthisis embraced seventy-three cases, including all stages of the disease.

These cases have been analyzed by MR. GEORGE FOY in the *Medical Press* for September 10, 1890. His cases are divided into three groups.

a. Those in which creosote inhalations were alone employed.

b. Those in which creosote was administered both by inhalation and by the stomach or the rectum.

c. Those in which the drug was given only by the stomach or rectum.

He concludes that,—

1. Intrapulmonary and intratracheal injections of creosote are of doubtful utility, and may be positively injurious.

2. For administration by mouth or rectum, solutions and emulsions of creosote are preferable in most cases to capsules, pills, or wafers.

3. Milk is an excellent vehicle for the administration of creosote in solution or emulsion.

4. Each method of administering creosote —viz., by inhalation, by mouth, or rectum alone, and by both these channels simultaneously—is useful, and may be partially adapted to individual cases. In suitable cases the most rapid progress seems to be made when all these ports of entry are utilized.

5. The best results for each individual attend the administration of the maximum quantity of creosote which the patient will bear.

6. The average patient will not easily tolerate more than 10 or 15 minims of creosote *per diem* for any great length of time, and many will bear only 2 or 3 drops *per diem* continuously administered.

7. It is very important that the treatment be uniform and uninterrupted.

8. Consequently an effort should always be made, if tolerance of creosote is shown by any one mucous surface to employ some other channel of introduction.

The following formula was the one commonly used:

℞ Creosoti, ʒi;
Glycerini, ad ʒiii.
Ft. mist.

Sig.—Take half a teaspoonful after meals, at bedtime, with whiskey, half to a teaspoonful, and water two ounces.

The results given from the treatment are most satisfactory, patients showing a marked increase in weight and a return of their normal strength. The difficulty of securing good beechwood creosote might be met, we think, by the use of guaiacol, which exists to the extent of sixty per cent. in good creosote.

THE ACTION OF SALOL ON THE KIDNEYS.

Salol is a drug intended to take the place of quinine and salicylic acid, which at first was recommended as entirely free from noxious properties. Its drawbacks and dangers remained to be discovered by clinical observation. It was first prepared by Von Nencki in 1883, and was introduced into practice by Sahli in 1886. It is the phenylic ether of salicylic acid, and, as is well known, can be split up into its components, phenol or carbolic acid (some forty per cent.) and salicylic acid (some sixty per cent.), by the pancreatic juice, and to a less extent by the saliva, by the action of bacteria, by organic tissues, and by alkaline carbonates. These components are eliminated from the body, probably as phenyl-ether, sulphuric acid, and salicyluric acid. Its decomposition and elimination from the body take place somewhat rapidly, for in half an hour after the administration of 30 grains of salol, salicyluric acid can be detected in the urine; but the complete elimination of its components requires a much longer time. Four days after its ingestion (in one case five days) the dark-green or even blackish tint characteristic of carboluria is observable. The result of this slow excretion is that when salol is given continuously its components are apt to accumulate in the system, and give rise to medicinal and even toxic effects of an enduring kind. The action of salol is doubtless due entirely to the phenol and salicylic acid into which it is broken up, though Sahli surmises, from the fat-like chemical character of salol, that in large doses it may be absorbed without decomposition. Even if this were so, however, it is by no means impossible that it would be split up in the tissues, if not in the alimentary canal.

Corresponding to its composition, the therapeutic action of salol is antipyretic and antirheumatic. While some authorities maintain that it is free from all untoward effects, and even when long-continued gives rise at most to some tinnitus, others have observed somewhat disquieting results from it, attributable chiefly to the carbolic acid set free by its decomposition in the body.

Georgi, who takes up the former position, did not come upon a single case in which salol had produced unpleasant effects or complications. "In the urine I never could detect any morbid substance, and certainly no albumen, which indicated that the drug gave rise to renal irritation," he says. Von Jaksch goes further, and maintains that even when albuminuria was present it was certainly not increased by the ingestion of salol, and that consequently the drug could not act as an irritant on the kidneys. He adds: "There is, therefore, no reason against employing these substances (salicylic acid, salol, antifebrin, and thallin) in cases of nephritis." Herrlich, on the other hand, reports a case of unmistakable carbolic poisoning after the use of salol, with marked strangury, vesical irritation, and carboluria. Josefowitsch met with the case of a patient, aged 40, who had taken about three hundred and fifty grains of salol in four days, and who suffered from intense albuminuria with violent pain in the loins, only ceasing two days after the salol was left off.

It is thus seen that there is a marked discrepancy between the views of different authorities as to the danger which follows the use of salol in large doses, Kobert especially maintaining that from the large proportion of phenol which salol contains it is, comparatively speaking, a toxic substance, while Sahli regards the statements of Kobert as exaggerations and rejects his cautions as purely theoretical.

Kobert, however, insists upon the position which he has taken up, and states that the phenol which is derived from salol, whether set free in the stomach, intestines, or other organs, is so toxic a substance that any exceeding of the maximum dose must be regarded as hazardous. The maximum dose in Germany is 1½ grains at a time, or seven and a half grains in the twenty-four hours. In Austria it is given in ¾-grain doses, or two and a half grains a day.

If, then, as Kobert states, a patient is given, as Sahli recommends, as much as one hundred and twenty-three grains of salol a day, some fifty grains of phenol are set free in his body. In other words, the patient will then receive over six times the German maximum dose, or twenty times the maximum dose allowed in Austria.

As additional evidence of the correctness of Kobert's position in a paper on the action of salol on the kidneys, published in the *Practitioner* for August and September, 1890, Dr. Hesselbach reports the case of a woman in his out-patient clinic who died after a dose of 120 grains of salol.

The patient was a servant-girl, 22 years of age, who, on May 18, was seized with acute articular rheumatism. As sodium salicylate failed to produce relief, 15 grains of salol with sugar of milk was ordered every two hours. The mother, however, of the patient gave her double the quantity; in other words, two such powders every two hours, and the patient accordingly received one hundred and twenty grains of salol within eight hours. Before she received the last powder she became faint, and gave confused answers, and passed into a comatose condition, with stertorous breathing, only showing signs of sensibility by moaning when the painful joint was pressed upon. This condition continued practically unchanged for four days, when death resulted. On post-mortem examination the kidney was found to have been already the seat of chronic nephritis, but which must have been of slight character, since it had given rise previously to so little disturbance as to escape notice.

The epithelial changes in the kidney showed that from the administration of the salol acute nephritis of sufficient intensity to prove rapidly fatal was produced. In order to determine as to why, in the first place, the salol proved toxic, and, second, which of the two components of salol is charged with the toxic action,—the phenol, which was most likely, or the salicylic acid, or both together,—Dr. Hesselbach instituted a series of experiments, commencing with an investigation as to the action of the phenol on the kidney, then salol, and, finally, salicylic acid. His experiments show, in the first place, that the use of carbolic acid, in whatever form it is administered, and therefore that of salol, is contraindicated when renal disease is present.

His experiments further show that the renal changes in salol-poisoning are chiefly due to the phenol it contains, and it is only after very large doses of salol that the toxic effects of the contained salicylic acid become apparent. It is difficult, however, to determine with certainty which constituent is most

potent in producing the symptoms of salol-poisoning, as the symptoms produced by the one are not unlike the symptoms produced by the other.

The author, however, believes that the toxic action of phenol may occur more readily if the renal epithelium is already diseased. From his studies Dr. Hesselbach concludes, first, that the large proportion of phenol contained in salol renders it such a toxic substance that its unrestricted therapeutic use is fraught with danger; and, second, that in renal disease, acute or chronic, salol is contra-indicated.

Kobert's caution, of which Sahli makes so light, is therefore very far from unnecessary.

INFLUENCE OF ALKALIES ON THE EXCRETION OF URIC ACID.

Dr. Spilker, under the direction of Professor Salkowski, has made a number of experiments on himself and on a dog to determine as to whether alkalies and alkaline mineral waters diminish urinary secretion. Nitrogen was estimated by the method of Kjeldahl, and the uric acid by Leube and Salkowski's method. It was found that the ingestion of large quantities of albuminoids in man greatly increased the amount of urea, but slightly increased the uric acid. In general the proportion of uric acid to urea was, on ordinary diet, as 10 to 32.3, while with alkaline diet this proportion was changed to 12.36. As a consequence alkalies diminish the excretion of uric acid or rather its formation.

Comparative experiments made on the dog, however, gave different results. The administration of acetate of sodium increased the excretion of uric acid not only while on that diet but several days after the alkaline diet had been stopped. There is, therefore, in the dog a diminution of oxidation under the influence of alkalies.—*Repertoire de Pharmacie*, September 10, 1890.

THE ABORTIVE TREATMENT OF HERPES BY ALCOHOL SOLUTIONS.

In his inaugural thesis, presented at Lille in 1889, Dr. Dupus describes a method of aborting herpes proposed by Leloir (*Zeitschrift für Therapie*, September 1, 1890).

Professor Leloir, suffering himself from repeated attacks of herpes labialis, found that after the application of eau de Botot not only did the pain diminish in a few minutes, but that extension of the disease was prevented. Leloir states that even in the stage of erythema the use of alcohol will entirely arrest the progress of herpes within a few hours, while if the affection has extended to the formation of blisters, the arrest does not occur until within one or two days; but if, on the other hand, the stage of suppuration has been reached, the progress of the disease is remarkably shortened, the pustules shrivel up and dry with extraordinary rapidity.

Professor Leloir, according to Dupus, claims that in this manner even the most violent attack of herpes labialis, or even herpes zoster, may be cured within two to five days. Not only the cutaneous symptoms, but also the subjective symptoms, such as the pain, are thoroughly influenced by the alcohol, and in addition the burning and the neuralgia are greatly relieved.

The author gives a number of different formulæ of alcoholic solutions for this purpose, using alcohol (ninety per cent.) with two per cent. resorcin, one per cent. thymol, or three per cent. menthol. Other formulæ are the following:

Carbolic acid, one-fourth of one per cent. in alcohol.
Resorcin, three per cent. in alcohol.
Muriate of cocaine, two per cent. in alcohol.
Extract of cannabis indica, five per cent. in alcohol.
Menthol, three per cent. in alcohol.

He also recommends ten per cent. (?) tannic acid solution in alcohol with two per cent. cocaine; but in view of the cases which we have placed on record of marked symptoms of poisoning following the use of such strong solutions of tannic acid, caution should be observed in the employment of the latter formula.

INTESTINAL ANTISEPSIS IN TYPHOID FEVER.

The following is the treatment recommended by Professor Teissier of Lyons (*Lyon Médicale*, September 7, 1890):

1. Morning and evening a capsule of 7 grains of alpha-naphthol, with salicylate of bismuth.

2. Sponge once in twenty-four hours.

3. To restore the action of the kidneys after the mid-day sponging erectile injection is given of 1 drachm of the extract of cinchona and 8 to 15 grains of the sulphate of quinine dissolved in sulphate of valerian.

4. The diet is restricted to Bordeaux wine, milk, and broth.

The author states that he has employed his treatment in fifteen cases of typhoid fever, some of which were of exceptional severity, one case only dying, due to suppurative nephritis occurring at the close of the disease. In almost all of these cases complete antisepsis was realized about the fourth day of the treatment, this being recognized by the green tint of the urine, temperature depressed progressively, the albuminuria disappeared, the spleen regained its normal volume, and the tongue became moist and lost its furred condition.

After a regular fall of temperature there then occurred a series of marked thermic oscillations, lasting from four to eight days, the patient then passing to the stage of convalescence, a stage of the disease which was remarkably short. He further adds, that through all the duration of the treatment the typhoid aspect was wanting.

Reviews.

MINERAL SPRINGS AND HEALTH RESORTS OF CALIFORNIA, WITH A COMPLETE CHEMICAL ANALYSIS OF EVERY IMPORTANT MINERAL WATER IN THE WORLD. By Winslow Anderson, M.D., etc. Illustrated. A Prize Essay.

San Francisco: The Bancroft Company, 1890.

The benighted denizen of the effete East may well gaze in astonishment at the revelations of these pages. We are all willing to grant the immense advantages of California,—its gold, its scenery, its climate, its productions,—these are all part of our national pride, but here we realize for the first time that its springs—already discovered, analyzed, and found full of virtue—number one hundred and ninety-four, up to the date of the issue of this book. At the present moment, even while we write, new springs are undoubtedly bursting forth, and those previously existing in neglect are being analyzed and tested. How simple the miracle of Moses and the rock, had Moses been travelling the wilderness of California rather than the wilderness of Sinai, for anywhere he struck he would have hit a spring, and then the water would have been medicinal!

One can read this book and select his spring. That is what the book is for. He may select it either from the analysis, or from the attractive name it bears, or, in many cases, from its appearance to the eye, for the work is profusely and beautifully illustrated. If he be obese, as many celebrated men have been, there is the "Antifat" spring. Be he warlike, the "Hot Arrow-Head;" or financial in his tastes, the "Hot Bonanza" will do; or thirsty of temperament, "Cold Soda;" or hungry, "Cook's;" or if he be an anthracite baron, "Coal Valley;" or a classic scholar, the "Eureka;" or a Philadelphian, "Fairmount;" or a Mormon, "Salt Lake." For a general choice on chances give us "Skagg's," "Zem-Zem," or "Tassajava." If the searchers for springs be of happy mind, there are "Crystal" springs; if poetic, "Byron;" if going to the bad anyway, why one can try "Casa Diabolo" or "Bland's Hot Sulphur."

Having selected one's spring, by name, analysis, or artistic portrayal, the readers of the volume should study the pages in which is given a description of the general rules for using mineral springs, find out how hot the water should be or how cold, and how long he should try it. These rules will vary with the varying nature of the spring and the variety of disorder from which he suffers. Still a failure to obtain a complete cure with such an array of remedial springs cannot fail to cast a very marked suspicion upon the genuine and honest character of the disease and its possessor.

E. W. W.

RAILWAY SURGERY. By C. B. Stemen, A.M., M.D., LL.D.

J. H. Chambers & Co., 1890.

Specialism, we know, is the prevailing tendency of the present age in all the arts and sciences, and medicine has not escaped the epidemic; indeed, the latter has been very seriously attacked. Many cases have been, as in all epidemics, well marked and decidedly good; while, on the contrary, others have been positively bad cases. In the latter we would include the above work. To make a distinction between the practice of surgery in railway injuries and general surgery is, we cannot but think, making a distinction without a difference, and our reading of our author has not influenced us to the contrary. We admit that there are traumatisms, occurring in railway accidents, which may occasion special treatment, but may not the same be said of all injuries? The principles and practice are the same for all, and no surgeon who is well informed upon the laws governing general surgery needs any special instruction to treat injuries the result of railway accidents.

The views given by Professor Stemen are, in the main, based upon the general accepted

opinions of surgical writers of the present time. He advances nothing new, but judiciously advocates what experience has found most beneficial. The book is, in fact, made up from papers read by different authors at the meetings of the National Association of Railway Surgeons, and from the works of surgical writers; at least one-half or more of the context will be found within quotation marks. Thus, the chapter on "Railway Concussions of the Spine," an injury, if there is any, of a special nature belonging to railway accidents, may be said to consist almost entirely of extracts taken from Erichsen and Hammond; that on "Color Blindness," from a paper by Oliver; while Ashhurst and Agnew are freely quoted throughout the whole book.

J. H. C. S.

Correspondence.

PARIS.

(From our Special Correspondent.)

Condurango and Condurangine—The True Value of Sulphurous Acid as a Disinfectant—Danger of Insoluble Medicines—Cocaine and Opium—Parents Responsible for their Children's Doctor Bills—Influenza and Surgery—The Yelling of Microbes.

Condurango and its alkaloid condurangine have been the subjects of recent investigations conducted by Dr. Guyenot at the Cochin Hospital. The alkaloid was tried on animals only, and found to be—as Dr. Kobert announced—poisonous in small doses. But, as Dr. Guyenot remarked, the toxic effects are chiefly evident on the nervous system, the accidents manifesting themselves a long time after the administration, and increasing slightly with the dose, though not proportionally therewith. In frogs, for instance, the lethal dose is 1 milligramme ($\frac{1}{60}$ grain), and the accidents—locomotor ataxia—consequent upon the hypodermic injection will begin to appear only thirty-six hours after the operation. Such an action, at long range, as it were, has never been noticed with any other poison introduced through either hypodermic, intravenous, or intramuscular injections. This singular and characteristic property of condurangine, Dr. Dujardin-Beaumetz has suggested, may possibly be due to the fact that the alkaloid itself is not poisonous, but becomes so under the influence of some liquids of the living organism, an hypothesis to a certain extent explaining the long delay, some time being necessary for the splitting or transformation of condurangine.

As regards human patients, the drug itself was employed, and, its anticancerous virtues being more than doubtful, only in stomach-diseases, from simple gastralgia to incipient ulcers, with the following results: Condurango was found to allay and stop pain, even in ulcerous cases; to decrease and often suppress the vomitings caused by the organ's anatomical or functional alterations; to have an apparently special curative action on hæmatemesis; and, finally, to possess a most beneficial influence over the appetite and general condition of gastralgia patients. So, on the whole, Dr. Guyenot considers condurango entitled to a fair place in therapeutics as a very useful medicament in those states of dyspepsia, torpid assimilation, and imperfect nutrition, rapidly leading the patient to emaciation and cachexia. The pharmacology of condurango is simple enough. Among the different varieties offered under the same generic name, the only one to be used is the *Gonolobus condurango*, called in South America "condurango blanco." The drug may be given in the shape of powder, dose from ½ to 1 drachm a day; alcoholic tincture, strength 1 to 5, dose 2½ to 5 drachms; and a syrup made by mixing one fluidounce of tincture and three of syrup of orange-peel, dose 2 to 5 tablespoonfuls. Infusions, decoctions, and all watery preparations should be discarded. As to condurangine, a better knowledge of its properties is necessary before it can be used in human medicine.

In measure, as our knowledge of antiseptics widens, the fact becomes more evident that each disinfecting agent has its special province, and each micro-organism its peculiar antagonists. One substance alone—namely, corrosive sublimate—is known as a universal microbicide; but its highly poisonous properties and other reasons render the substitution of other antiseptics often desirable. Hence the necessity of a better insight into the exact behavior of each antiseptic with the different germs of diseases. An important contribution to this branch of science has just been made by Drs. Thoinot and Masselin, who have just completed a thorough investigation of the efficacy of sulphurous acid gas as an antiseptic. It should be explained that the experimenters, both skilful and well-trained gentlemen, had at their disposal the resources of the Pasteur Institute microbiological laboratory and the use of some vacant wards at the Charité Hospital. Owing to these facilities, they were enabled to procure or prepare the various septic agents; to test their virulence before and after exposure to sulphurous gas; to conduct the

disinfecting operation under conditions closely similar to those of current practice; and, in fine, to bring into play all the nice exactness now indispensable in scientific researches that are to stand the fire of modern criticism.

The following were the viruses tested: (*a*) Pasteur's septic vibrio; (*b*) bacterial or symptomatic charbon; (*c*) bacteridial charbon; (*d*) tuberculosis; (*e*) glanders; (*f*) typhoid fever; (*g*) diphtheria; (*h*) Asiatic cholera; and (*i*) Guadaloupe farcy. Each virus was simply exposed to the sulphurous acid in a room of fifty cubic metres (seventeen hundred and sixty-five cubic feet) capacity, tightly closed with putty. The gas was evolved in various proportions, but the quantity of sulphur consumed noted in all cases. Now, as to the results: (*a*) Septic vibrio, or Pasteur's septicæmia, was tried under four forms,—that is, as bouillon culture, dried culture, serous discharge from a septicæmic Guinea-pig, and septic powder. The last, obtained by drying the discharge to the shape of varnish on a glass plate and powdering, is exceedingly virulent. Sulphurous acid gas proved, even in large proportions, utterly powerless in all cases. (*b*) Symptomatic and (*c*) bacteridial charbon remained unaffected, as a rule, though large proportions of sulphur fumes continued for forty-eight hours will occasionally have some effect. (*d*) Tuberculosis in cultures supplied by Professor Nocard, and in the form of sputa, fresh and dried. In all cases Koch's bacillus was found to have been destroyed by a twenty-four hours' exposure to the fumes, in the proportion of 60 grammes of sulphur to the cubic metre (28 grains to the cubic foot). Even in the most refractory form, the sputa, the bacillus will be killed, but the full dose of sulphur is necessary. (*e*) Glanders; cultures of full virulence will be destroyed after twenty-four hours' exposure to the fumes of 60, and even 50 or 40, grammes (28, 23, and 19 grains) of sulphur to the cubic foot. (*f*) Typhoid fever; cultures of Eberth's bacillus from the morbid spleen. Complete destruction after twenty-four hours with 60 grammes of sulphur. (*g*) Diphtheria; cultures supplied by Dr. Roux. After twenty-four hours and 60 grammes of sulphur all Kleb's bacilli were entirely destroyed. (*h*) Asiatic cholera; the only cultures procurable being rather old, the proof cannot be said to be quite satisfactory, yet the bacilli were easily affected by even small doses of sulphur. (*i*) Guadaloupe farcy; virulent cultures of this peculiar affection of the ox, obtained from Professor Nocard, were invariably rendered inert after twenty-four hours' exposure to 60 grammes of sulphur, but smaller proportions were unreliable. To recapitulate, sulphur fumes may be considered useless with septic vibrio and charbon. But in 60-gramme doses to the cubic metre, and after twenty-four hours' contact, they may be relied upon to destroy tuberculosis, glanders, farcy, typhoid fever, diphtheria, and probably cholera germs. The germ of scarlet fever remaining as yet unknown, no experiments could be instituted. At the same time this instructive series of discriminating experiments explains why some good authorities speak so highly of sulphur fumes as an antiseptic, while other equally good authorities have pronounced them nearly worthless.

At the Lyons Medical Society Dr. Augagneur the other day related a singular case illustrating once more the danger of administering insoluble medicines. A patient, suffering from a mild type of syphilis, was some time since treated with hypodermic injections of *huilegrise*,—blue oil, if you like,—a sort of liquid mercurial ointment, made with oil instead of grease. The disease followed its regular course, and the patient was dismissed as cured. But ever since he remained liable to frequent ulcerous stomatitis; and about a month ago, having received a blow on the thigh, the place where the injections were performed, he was taken with so severe an attack of stomatitis that he had to go to the Antiquaille Hospital for treatment. There he was found by Dr. Augagneur to have two tumors, from one of which metallic mercury could be drawn by simple puncture and expression. The other tumor had to be extracted, and was found also to contain mercury. After the operation the patient rapidly recovered.

The happy results often secured by combining several medicines, complementing one another, have been observed by Dr. Tison when opium and cocaine are associated together. At the last meeting of the Association for the Advancement of Sciences he related a number of cases of obstinate vomiting treated successfully with pills containing each 1 centigramme (1/6 grain) of cocaine muriate and the same quantity of watery extract of opium. Of course some inert excipient, such as licorice or marshmallow powder, must be added to render the preparation less deliquescent and more manageable. The pills were found especially useful in the symptomatic vomiting attending such chronic affections as tuberculosis, gastritis, hysteria, and gastric dilatation. The dose is 5 or 6 pills a day, ten minutes before meals.

A case of some importance as a precedent was near the end of last month decided by the Seine civil court in favor of the medical profession. The circumstances were as follows: Drs. B. and L. B., being regularly called, attended a young man named L. during a sickness which ended fatally. The patient being insolvent,—he was living in furnished rooms,—the physicians sent the bill to the young man's father and mother as responsible for the amount,—five hundred and eighty-five francs (one hundred and seventeen dollars). This the old farmers, although quite well off, absolutely refused to pay, under the plea that their son at the time was of age, living by himself in Paris, and earning a good living. Besides, they added, they had given up all claims to his succession. The lawsuit was then begun. On giving judgment, the court held that the sum demanded was, considering the standing of the physicians and the position of defendants, fair and reasonable; that at the time of the sickness, deceased being without any means of support, was by law entitled to alimony from his parents, and said alimony included sickness expenses; and, finally, that Drs. B. and L. B. were called in by a person engaged by Mrs. L. to take care of her son during his sickness, said attendant being present during the visits and the surgical operation. Consequently Mr. and Mrs. L. were jointly ordered to pay to plaintiffs five hundred and eighty-five francs, plus interest at five per cent., and sentenced to pay all costs of action.

All has not been said, it seems, about the misdeeds plainly chargeable to our insidious enemy,—the grippe. In an important communication read before the Academy of Medicine, Dr. Verneuil has conclusively proved its nefarious influence on the result of surgical operations otherwise promising a successful termination. The cases quoted were supplied by Drs. Jeannel, of Toulouse; Liot, of Paris; Bourdy, of Le Mans; Potain; Wm. Bennett; and many other eminent surgeons, besides the instances observed by Dr. Verneuil himself. The facts were collected in such number and variety as to leave no room for doubt, but, owing to their very abundance, they cannot even be recapitulated here. Yet a single one, a typical case, observed by Dr. Liot, may be briefly alluded to. The patient was a sturdy and healthy-looking man of 60, affected with two popliteal aneurisms, a rather large one on the right side of the body, and a much smaller one on the left. On November 16 the larger aneurism was excised, and the wound, reunited by first intention, healed up without any other complication than the appearance of an eschar—the size of a 50-cent piece—on the lower and exterior part of the leg. On December 2 the man caught the influenza, which turned into broncho-pneumonia, but appeared to affect in no way the limb operated. Yet the eschar still remained adherent. The recovery from grippe was slow and tedious. On January 16, however, the patient was considered to have sufficiently recuperated to stand the second operation, which was a comparatively simple and speedy one, consisting in ligating the artery above the sac. Again healing without suppuration was secured, when, nine days later, the patient was suddenly seized with pulmonary congestion, accompanied with great cerebral excitement and painful swelling of the right knee. He died two days later,—on the 27th. At the autopsy, the left knee, the last operated on, was found intact. On the right side the popliteal cavity was healthy, but the knee affected with purulent arthritis, and along the tibio-peroneal trunk a purulent duct, leading to the eschar already mentioned. Death was caused by the lung accident. The general conclusions arrived at by Dr. Verneuil are that grippe, as an infectious disease, may have over wounds and surgical operations an injurious influence, persisting even during the convalescence from the disease proper, and manifesting itself through pyogenic tendencies, which may take various forms, such as conjunctivitis, otitis, pleurisy, peritonitis, purulent arthritis, abscesses, etc. On surgical operations its pernicious effects are leading to pyæmia, retarding cicatrization, causing suppuration in spite of all antiseptic appliances, and, in general, causing all sorts of dangerous complications. In consequence, except in cases of absolute necessity, no surgical operation should be undertaken on a patient while under the influence of the grippe. And before a person who has had the influenza be operated upon, it is necessary to wait for a perfect and thorough recovery, and to recommend for some time a tonic and reconstituting treatment, with quinine and a change of air. That influenza is a microbial disease, due to some bacillus or other, scarcely admits of doubt, although the infectious germ cannot be said to have been identified with certainty.

In fact, nowadays most diseases are indiscriminately charged to the infinitely small. Following the lead of scientists, unsophisticated people are ready to see microbes everywhere. Only their conception is rather crude. As an illustration of this popular idea, a professor was the other day relating the following

dialogue overheard in his laboratory: "Say, Alphonse," asked the boy of the head porter, "why is that water making so much noise before boiling?" Alphonse: "Why, this is Seine water. It is the microbes yelling when they feel the heat."

PARIS, September 19, 1890.

BERLIN.

(From our Special Correspondent.)

The Medico-Scientific Exhibition for the Tenth International Medical Congress, and which constituted an important part of it, was, indeed, the first international medical exhibition that was ever conducted, either at home or abroad, in such an exhaustive and perfect manner. There were whole subjects of medicine, and its assisting and kindred sciences, shown on the most extended scale; and, as the various subjects were apportioned off into their several departments, this precaution prevented crowding, and necessitated the most interesting objects being seen. I shall in the following pages briefly describe the principal subjects of pharmacology and various food-stuffs that were by no means brought near to each other, but only in a most extended manner was there any attempt made to put together different things which logically belonged so. Such a means of comparison should be particularly sought after in such an exhibition to prove the usefulness of the different objects, and, if possible, put the inventors to a most crucial test before allowing their discoveries and inventions to become part of the recognized means of therapeusis for suffering humanity. Both groups — "for new pharmaco-chemical and other medico-chemical materials and preparations," as well as "the most recent pharmaceutical materials and preparations"—embraced a collection of those medicines that have been in use for a long time, and later a number of such new chemical products as have only in part won a sure footing in therapeusis, or are still undergoing examination, with the hope of their becoming valuable additions to our list of medicines. All these materials are denominated as purely chemical bodies, as drugs whose qualities are only partly known; by pharmaceutical preparations and careful medical formulæ, in which the substances mentioned have been presented to the use of the profession. Many of them have now so advanced in reputation as to indicate that their real qualities are becoming better appreciated, and that they have attained to lasting position in public opinion.

Large collections of drugs in the rough and unprepared state as they arrive at the manufacturers were exhibited by several important firms, such as Schuchardt, of Görlitz; Brückner, Lampe & Co.; together with Schering and Riedel, of Berlin, as well as others. The latter had arranged, in a handsome, magnificently-apportioned cupboard, a complete collection of the medicines used in China, among which serpents, human fæces, and such nonsense deserve especial mention, as furnishing an idea of the basis upon which medicine stands among the sons of the heavenly kingdom, a view for which we can be only thankful to the exhibitor. The Imperial Hygienic Society, in combination with several of the larger German manufacturers and Professor Liebreich, showed a perfectly analogous collection of medical drugs of ancient, middle, and recent times. Professor Liebreich had added for this purpose the collection of the Pharmacological Institute of the Berlin University. Schimmel, of Leipsic, Gehe, of Dresden, Merck, of Darmstadt, and others had here combined their collections of world-wide reputation. Moreover, the Imperial Hygienic Society had added many mounted microscopical preparations of different kinds, numerous preparations, both wet and dry, for bacteriologico-chemical examination, the most approved incubators, etc., all contributing to a magnificent collection. The objects put on exhibition by Professor Liebreich aroused special interest. With the introduction of chloral hydrate, first exhibited by him, commences in medicine the use of such organic bodies, which are here shown in the most artistic manner. Of especial interest was the exhibition of a new preparation,—a lanolinum humanum,—which deserved especial notice. Moreover, Jaffe and Darmstädter, the exhibitors of lanolin,—a preparation that has now become most common in Germany,—had a most tasty arrangement of it in its various forms. Many manufacturers, specially engaged in the preparation of certain medicines, had contributed their parts in sending their exhibits under the forms of crystals, powders, and other shapes. Zimmer, of Frankfort, and others had over a dozen different preparations of quinine, besides arlcolin, ecgonin, catoin, paracatoin, dicotoin, leucotin, etc. Knoll exhibited codeine and diuretine; Fahlberg, saccharin; Bayer, aristol, sulphonal, phenacetin; Riedel, antipyrin, sulphonal, and salipyrin. A collection of Dr. Helbing, of London, was very striking, as it

presented many rare vegetable preparations, with their imperfections and adulterations. There were numerous medicines in compressed pastille form, as well as in that of keratin-coated pills. Yet both these methods of preparation are not entirely free from objection. With the exception of the pastilles of corrosive sublimate here exhibited, the others, according to Angerer's statements, are in practice very objectionable, because they are so hard to dissolve in water. Again, the tablets, to be carried in the pocket, with the pastilles of the compressed acetate of morphine, each containing one per cent. of the drug, and the other useful medicines, in this form, are not entirely free from objection, because the physician must needs dissolve them himself, and for this purpose requires absolutely pure water, which, at present, must rank as an objection, as this commodity is not to be found in every household. The keratin-coated pills, which are not soluble in the gastric juice, but the intestines, by this means bring the medicines they contain in contact with the chyle, which then produces its effect, and might easily lie in the folds of the intestines undissolved, and then pass, in this condition, into the rectum, to be discharged with the fæces.

The soap that lately has attracted attention, especially in dermatology, was exhibited in its liquid state by various firms. The use of medicines in the form of soft soap has certainly a great future in the treatment of skin-diseases.

Creolin was exhibited by Artmann and Pearson. It is to be hoped that Schulke & Mayr, of Hamburg, will verify in regard to sysol, the latest antiseptic, the reputation that has preceded it,—viz., that it is active and not poisonous. Later this discovery may contribute to the purification and the free introduction of its use in soaps. Seabury & Johnson, of New York, had very beautiful recent plaster preparations. Steinkauler, of Frankfort-on-the-Main, exhibited paraffine, both liquid and solid, as well as preparations of vaseline, among which latter was fresh yellow, viscous, natural vaseline. There were exhibited Stephan's suppositories, of the most varied kinds, for the treatment of acute and chronic diseases. Besides suppositories for the treatment of urethral and prostatic disease, there were also those for cervical, nasal, œsophageal, anal, uterine, and rectal treatment, and these, too, arranged for the application of various medicines in the most approved styles. The fine inner metallic coating, which insures elasticity and readiness to these preparations, is first protected by a firm outer covering, which at first hardens, and then, after its introduction to its destined place, dissolves and produces the desired effect. The medical preparations for journeys in the tropics, as introduced by the Royal Commissioner Wissmann, were exhibited by Kade, an apothecary of Orange. Simon's drug-store had sent an arrangement for a country physician, and which contained every necessary instrument and medicine for inland journeys. Moreover, the first department embraced, in addition, the most useful inventions for chemical and bacteriological research, for the analysis of urine, the examination of sputa for tubercle bacilli, as well as for drinking-water and the contents of the stomach.

To describe all the other medicines and preparations exhibited by various manufacturers, and, to an extent, at the suggestions of physicians, would be impossible in a general sketch. Still, I shall mention a few important subjects in the group of natural preparations, that were represented in great completeness.

Peptones were to be seen in numerous quantities, such as sterilized animal peptone and the chalybeate peptone of Dendeyer, of Brussels, dry animal peptone and the animal peptone of Kemnerverisch and Koch; albuminous preparations of peptone, of Antweiler; the same preparations in combination with beer (Ross & Co., of Kleinflottbeck), cocoa, chocolate; and a liquid bovinine by Bush, of London. Aleuronat, a plant albumen, by Handhausen, of Hamm; an extract of beef-tea, by Maggi; essences of beef, veal, mutton, and chicken, and other excellent meat-teas, by George Moson, of London, these latter being, on account of their refreshing and strengthening properties, highly to be recommended to invalids and convalescents; capsules of beef-tea and of peptonized beef-tea, by Quaglio; the Leube-Rosenthal solution of meat, by Wahrburg, of Jena; powdered meat for the preparation of beef-tea, by Schiller, of Liban; vegetable butter, by Petty & Co., of London; cremain, a condensed cream, by Cremain Aktiebolaget, of Stockholm; powder of condensed milk, sterilized milk, by Drenckham, of Holstein; vegetable milk, by Hewel & Veithen, of Cologne; together with an innumerable collection of infant foods, some celebrated and some not so well known, by Loefflund, of Stuttgart; as well as Neave, Kufeke, Liebe, Mellin, of London, Meyer, of Berlin, Petrocchi, of Toscana, Reuss, Timpe, Nestlé, and others. The Hygienic Institute of the University of Breslau, under the management of Professor Flügge, had on exhibition various important tests for sterilized and other kinds

of milk, in vessels with different patent sealing arrangements. Some of these were already injured from long keeping, others looked very inviting. In each vessel there was an empty space (shake space) above the milk, where it had become partially churned from the unavoidable tossing that it had received. All these methods for the serving and preserving of milk plainly showed that, in spite of the advertisements of the various firms, the milk prepared by them does not fulfil the high claims made for it. A new apparatus for the sterilizing of milk, by Newhauss, Gronwald & Oehlmann, of Berlin, trials of which have been made in the Imperial Hygienic Society, seems, after all that has been heard so far, the most perfect method that has been presented on the subject. The preparations for managing it in the exhibition are very complete. Besides this, there were many other apparatuses for the sterilizing of milk. There were also other apparatuses belonging to the subject of therapeusis,—models, instruments, rests for the sick, chairs for making examinations and performing operations, collections of preparations, the varied display of the medical department of the Imperial Prussian minister of war, etc. All these can only be mentioned.

This exhibition will remain in the memories of the visitors to the Congress as the only one of its kind. May it fulfil to the highest extent all its high aims, to the healing of the sick and preservation of the well.

BERLIN, September 15, 1890.

ON THE VALUE OF HOT AND DRY AIR.

To the Editor of the THERAPEUTIC GAZETTE:

DEAR SIR:—In the THERAPEUTIC GAZETTE, xiv. 550, you quote Dr. Sehrwald's conclusions regarding the action of hot and dry air on the temperature of the lung. In the eighth paragraph he says,—

"The opinion of Halter that the bacilli of tuberculosis are destroyed after subjection for short intervals to air at a temperature of 105° has never been demonstrated," and concludes with the statement that "the employment of hot air in the treatment of tuberculosis" should be done away with.

That tuberculosis cannot be permanently benefited by any short treatment of hot air is doubtless true. But in Southern California it has been repeatedly demonstrated that this disease is unable to withstand the effect of a permanent treatment of warm and dry air, such as our climate affords to the invalid, except in cases where the disease is far advanced. Dr. King, I believe, has reported on nearly two hundred cases which came under his personal knowledge at Banning, a small station on the Southern Pacific Railway, and the larger proportion of these *fully recovered*, a large number were visibly benefited, and the disease was arrested in all but one or two per cent. of the cases, where tuberculosis was too far advanced to be hindered.

These two hundred or more cases were reported in all the stages of the disease, and several who had been given up at their old homes, and only hoped to obtain a brief respite from death, seemingly recovered wholly. Upon their apparent recovery several of these returned to their old homes, and survived but a few months, while others, who were in less advanced stages, were permanently cured.

Banning is at an elevation of about two thousand two hundred feet, I believe, on the eastern slope of the San Gorgonio Pass, and subjected to the warm dry winds of the Colorado Desert. It is, therefore, peculiarly situated even for Southern California towns, and evidently has superior advantages for this class of invalids.

At San Diego tuberculosis is invariably arrested and cured in the earlier stages, and it is only to our equable climate and the dryness of our atmosphere that this seaport town can claim any peculiar advantages over other sections of the country.

Tuberculosis never originates under such climatic conditions as here exist, and in confirmation of this I would refer to the valuable contributions to this subject from the pen of my valued friend, Dr. P. Remondius, of San Diego, a member of the International Medical Congress, who has made a special study of the subject.

While San Diego is sure to permanently benefit all mild cases, patients in a more advanced stage are often advised to seek some interior point, away from our moist seabreezes, and where, as has already been shown, as is the case at Banning, even the most desperate cases are visibly benefited or at least arrested.

The great depressed basin known as the Colorado Desert, portions of which are over three hundred feet below sea-level, is especially adapted for these more advanced cases. The temperature on this desert in summer is perfectly dry, and often attains 140° F., or even a higher mark. In this pure atmosphere tuberculosis *cannot exist*, and the most ad-

vanced disease seems to quickly succumb, and to leave the patient in the full enjoyment of his faculties as long as he may choose to reside in this region. The native Indian is accredited with here attaining to an age of exceeding one hundred and fifty years, though no white man has yet attempted a residence in this region for that period of time.

Sometimes a patient, after full recovery in this rather dreary region, seeks to return to his old society on the coast or in the East,—a decision which usually proves quickly fatal if acted upon. This seems to prove my opening proposition that any short treatment of hot and dry air must prove ineffectual, if not even detrimental, in cases of tuberculosis.

The many cases already on record, however, prove that Dr. Sehrwald's last proposition is an erroneous one, but the employment of hot air should be continuous in this disease,—a condition that only the Colorado Desert most nearly furnishes. I believe that this region is destined to become the great sanatorium of the world for the treatment of lung-diseases, and while at first it may seem dreary and desolate to the pioneers, yet life among the warm and really invigorating breezes which here hold sway among the palm-trees will prove sweet to the invalid.

Those in less advanced stages will recover wholly, and parents who have children for whom they are anxious will find here a home where the young can compete on equal footing with their naturally stronger companions.

C. R. ORCUTT.

SAN DIEGO, CAL.

[Our correspondent does not appear to have appreciated the gist of the communications which he quotes. The discussion to which he refers does not deal in any respect with the value of different climates in the treatment of phthisis, but as to whether the inhalation of air at any temperature can succeed in raising the temperature of the air *within* the lungs to a degree sufficient to prove fatal to the life of the tubercle bacilli.—ED.]

SUBCUTANEOUS INJECTION OF QUININE.

To the Editor of the THERAPEUTIC GAZETTE:

DEAR SIR:—My attention was attracted by an article in the GAZETTE, August number, page 560, upon "The Subcutaneous Injection of Quinine." It is a practice I have followed for a number of years without knowing it was so little used, until reading the article above mentioned.

Upon looking up dates, I find my first case was in the fall of 1869, antedating Kobner one year; hence I was a pioneer in the practice, if not the leader.

The amount injected by me far exceeds that by either Kobner or Bacelli. They only used a one per cent. solution. My usual single dose is 7 or 8 grains, repeated every eight to twelve hours, until three or four are given.

The solution is prepared by taking 25 grains for three injections, or ½ drachm for four. The quin. sul. is put into a clean half-ounce vial, aq. pura, one drachm, is poured upon it, then acid. sul. dil. is added drop by drop until the solution is nearly clear. A few more drops of the dilute acid are usually required than there are grains of quinine. If the quinine precipitates, ten or fifteen drops more of water are added. To be sure there is no excess of acid, the solution is left still turbid by the undissolved quinine. When ready for use, the bulk will be about two drachms. Before using, the solution and syringe are warmed over a lamp. About two syringefuls are required for one dose. I unscrew the barrel from the needle, and let the needle hang while the syringe is refilled. This saves the pain of one puncture. Air, of course, is carefully excluded. I used to get one sore in every three or four injections, but considered it nothing where life was in such jeopardy. During the past year I have given a dozen injections to two patients without producing a sore, which I attribute to using less acid and completing the solution by heat.

CASE I.—September, 1869, Miss N. S. was prostrated by malarial poison. She had a stomach that would not tolerate quinine at any time, and now she was vomiting upon the slightest provocation. After days of failure to settle her stomach, I gave her three hypodermic injections of quinine with the happiest effects,—viz., retention of food and rapid recovery. A year later, the same conditions arising, the same treatment was adopted with the same favorable result.

CASE II.—Twelve years ago I was called to see Miss O., whom I found suffering with malaria. Her stomach rejected all food and medicine. After eleven days of fruitless effort, during which time her stomach did not retain a spoonful of nourishment, I gave her 25 grains of quinine in three hypodermic injections. Her stomach settled after the

it dose, and she was virtually well in two ys.

CASE III.—Mr. W., of bilious temperament and subject to bilious attacks, over ir years ago was sick most of the winter. ing anxious to get to business, he got out 1st of March. Being weak from sickss and tender from confinement to house, was unable to endure the weather, and in ew days came home with one of his bilious acks and a pneumonia of the right lung. is stomach refused medicine and food for elve days. I persuaded him to allow me inject quinine into his arm, and gave 25 ains, with ¾ grain of morphine, in three ses. In one hour after first dose he drank glass of eggnog. When I went to give the cond hypodermic, eight hours after the first, ound resolution had begun in the hepatized ng. (*Query.*—Did the quinine and morine cause the resolution?) After resting e day, 30 grains more, with 1 grain of rphine, were given in four doses, and a se that was considered hopeless by his ends made a rapid recovery.

I am satisfied, if this plan of treatment were ore frequently employed in malarious disicts, many lives would be saved.

Very respectfully,

G. A. HARMAN, M.D.

LANCASTER, OHIO, September 9, 1890.

RARE COMPLICATION OF WHOOPING-COUGH.

o the Editor of the THERAPEUTIC GAZETTE:

OBERT MEADE SMITH, M.D.

DEAR DOCTOR:—I see that Dr. Ellis, of ivermore, Ky., reports in your last number f the GAZETTE a case of a rare character, hich seems to be the only case of the kind at has been reported, at least in a long me.

As to the nature of the tumor, it was, without doubt, *an emphysema.* The sudden onset, he "rustling sound, similar to that produced y crushing soft paper in the hand," shows it o *have been air.* Furthermore, the very fact f there "being no discoloration of the skin," either "any pain," and its having come on during a "severe paroxysm of coughing," nd by its "disappearance after death," all o to show it was *air.*

Dr. Ellis wishes to know, "How air could et there?" I quote from as high authorias Professors S. D. Gross, Trousseau, and O. B. Wood, as to the way that air makes its way from the lungs to the neck, breast, or entire body.

Dr. Gross says, in writing of "Interlobular Emphysema," that "occasionally the air escapes into the cellular substance of the mediastinal cavity, where it is either arrested or it *extends up the neck* and *forms tumor*, which sensibly crepitates on pressure" (see "Elements of Pathological Anatomy," 1839, vol. ii. p. 61).

Trousseau says (in his lecture on whooping-cough) that "the air diffused between the lobules of the lung makes its way along the roots of the bronchi, and gives *rise to a subcutaneous emphysema*, which spreads, more or less rapidly, along the trachea . . . and crepitates in a characteristic manner when pressed. . . . Such an accident is grave, and generally terminates fatally. It is fortunately rare" (see Trousseau's "Clinical Medicine," vol. ii. p. 132, P. Blakiston & Co., Philadelphia, 1882).

In vol. ii. (Lippincott, Grambo & Co., Philadelphia, 1852) p. 56 of Professor Geo. B. Wood's "Practice of Medicine" you will find about the same explanation of this rare complication of whooping-cough; and Professor Wood here states, "That no doubt but the emphysema in this case depends on some solution of continuity in the air-cells or bronchial tubes *that cannot be detected.*"

Also Coats says, under the head of "Interlobular Emphysema," ". . . It may pass to the root of the lung, and from there up along the *trachea and out to the subcutaneous tissue of the neck*, and so lead to surgical emphysema; and *this has in some cases led to a mistaken diagnosis*, as Virchow has pointed out" (see "Manual of Pathology," by Joseph Coats, M.D., Lea Brothers, Philadelphia, 1883, p. 475).

Last, and not least by any means, on p. 71, vol. ii., of "Reynolds's System of Medicine," Hartshorne, Lea Brothers, Philadelphia, 1880, under the head of "Interlobular Emphysema," says, "Air extravasated into the connective tissue of the lung occasionally finds its way into the posterior mediastinum, and thence *into the subcutaneous tissue of the neck, face, trunk, etc.*"

So from the above authorities it would seem that it is a complication that has long been recognized by the profession.

I hope the above will clear up the case more perfectly.

I am, yours sincerely,

CHEVES BEVILL.

WINFIELD, ARK., August 26, 1890.

To the Editor of the THERAPEUTIC GAZETTE:

DEAR SIR:—Dr. W. P. Ellis's case, as reported in the August number of the GAZETTE, page 567, is, to say the least, unusual.

As far as the diagnosis is concerned, I will have to differ from him, granting it was either an emphysematous or sanguineous tumor, one of which it doubtless was.

The doctor says it was about two hours in forming. Now, I submit, if a quantity of blood equal to the size of the tumor described had left the circulation of a child of 7 or 8 years in that time, he would have been pretty well exsanguinated. But the doctor says there was no perceptible pallor.

Again, it had almost disappeared on the sixth day. I can hardly imagine a hæmatoma of that size disappearing by absorption in so short a time.

And, again, the slight dysphagia would be strong presumptive evidence against a blood clot. It would be sufficiently firm to interfere materially with deglutition, and respiration as well. And, again, the crepitation or crackling sensation imparted to the touch would negative blood clot, while it would favor emphysema. In fact, to my mind, all the signs are opposed to blood clot.

WM. A. MCCOY, M.D.

MADISON, IND.

Notes and Queries.

CASE OF POISONING BY "WILD MELONS."

In the *Australasian Medical Gazette* for June 15, 1890, MR. J. FRANCIS SOUTER reports the case of a child who was poisoned by a species of Cucurbitaceæ, which is abundant in New South Wales, which is ordinarily known as the "wild melon."

The patient was a child three years of age and of robust constitution, and was noticed by the parents to be feverish and unwell at eleven o'clock in the morning, at the same time complaining of nausea. This condition continued for some hours, vomiting of watery fluid taking place once or twice. At about four o'clock in the afternoon the child had a convulsion, the eyes rotating upward, and foaming at the mouth.

When Mr. Souter was sent for he found the child comatose, the teeth slightly apart, with the tongue pushed against them, the eyes fixed, with "pin-hole pupil," quite insensible to light. The pulse was 140, the temperature 98° F.

The child was given a warm bath, when again vomited a large quantity of fluid co taining the skins of several melons. As so as the child was removed from the bath t pupils again contracted. Two grains of ca mel and teaspoonful doses of brandy we given frequently, and in a short time a pr fuse perspiration ensued, after which the p tient slept for four or five hours, and on waki seemed perfectly well.

DETONATION OF TABLETS COMPOSE OF CHLORATE OF POTASSIUM AND CHLORIDE OF AMMONIUM.

The mixture of the above-mentioned salt which has been in use for some time as popular remedy for mouth and throat affe tions, has been viewed with suspicion, as probable source of mischief on account of th decomposition resulting between them.

After a few weeks, chlorine compounds a evolved, noticeable by the odor, and by th effect on the organic material which may l in contact with or near them.

If the quantity of the tablets is large, suf cient heat may be generated to cause spo taneous combustion, should circumstanc favor it.

In the *American Journal of Pharmacy* f August, 1890, MR. CHARLES BULLOCK writ that a lot of the tablets, more than a year ol were removed from the small bottles in whic they are usually put up, and four ounces o them placed in one bottle and finished for d livery. While standing undisturbed, a lou explosion occurred, and the bottle containin the tablets was almost pulverized, the concu sion breaking several other bottles in pro imity, although they were protected by past board cases.

The cause of the detonation may be looke for in the formation of chloride of nitroge as one of the results of decomposition betwee the salts.

DEATH FROM AN OVERDOSE OF PARAL DEHYDE.

The Dublin correspondent, writing to th *Lancet* for August 20, 1890, says, "On Sun day evening week a patient in the Fever Hos pital attached to the Cork Workhouse die from the effects of paraldehyde. The de ceased, Bridget O'Brien, aged 20, was ad mitted suffering from typhoid fever, and bu slight hopes were entertained of her recovery.

As she was suffering from violent delirium and sleeplessness, a hypnotic was prescribed, and the temporary nurse, acting for the ordinary nurse during leave of absence, whose name was Horgan, was instructed, both verbally and in writing, how to administer the medicine. The patient getting worse, Horgan overlooked the directions she had received, and, instead of giving 1 teaspoonful, unfortunately administered the entire contents of the bottle,—viz., from 6 to 7 teaspoonfuls. In about five minutes O'Brien fell into an unconscious state, and, despite medical assistance, remained in that state for hours, when she died. Horgan, it may be added, had done similar duty as temporary nurse in the most satisfactory manner during the past three years, and was a paid official of the hospital. She stated that, in the excitement caused by the delirium of the patient, she never looked at the label on the bottle. The quantity of paraldehyde that was administered is not mentioned, but it may be supposed the deceased girl took from six to seven drachms. The resident medical officer of the workhouse, in giving evidence at the inquest, is reported to have said that weakness of the heart's action was accelerated by the overdose. This appears strange, as it is usually believed that paraldehyde, instead of weakening the heart, like chloral, strengthens it, and diminishes its frequency. It is for this reason that it is especially valuable in the insomnia of cardiac affections. The coroner's jury returned a verdict that death resulted from failure of the heart's action, accelerated by an overdose of medicine administered while in a weak condition from fever. Horgan has been arrested, bail being accepted, and the trial will take place at Douglas Petty Sessions."

TESTS FOR ALBUMEN IN URINE.

Dr. Zouchlos recommends (*Wien. Allgem. Med. Zeit.*) the following as convenient side tests for albumen in the urine: A few drops of a mixture of 1 part of acetic acid, and 6 parts of a one per cent. solution of sublimate, when added to urine containing albumen, produces a slight cloudiness. Peptone, when mixed with acetic acid and sublimate in the above-mentioned proportions, causes no cloudiness, and this is true also of uric acid, solution of urea, phosphates and sugar. When the urine is much concentrated, it does not become cloudy on the addition of sublimate and acetic acid. Another method which is still more exact—even more than that with the ferrocyanide of potassium and acetic acid—is the method with rhodanide of potassium and acetic acid in the cold. It is best to mix one hundred cubic centimetres of a ten per cent. solution with twenty cubic centimetres of acetic acid, and to add some drops of this mixture to the urine to be tested. When albumen is present in small quantities, a distinct cloudiness occurs immediately on the addition of the above-mentioned mixture; when the amount of albumen is large, a thick white precipitate is thrown down. An excess of the fluid does no harm. Normal urine, when thus tested, invariably gives a negative result. The most convenient method is that with rhodanide of potassium and succinic acid, which can be carried about in the solid form in boxes. Equal parts of succinic acid and rhodanide of potassium are mixed together, and a small quantity is added to the urine. If even a small amount of albumen be present, cloudiness is produced.—*Druggists' Circular and Chemical Gazette*, August, 1890.

THE RELATIVE GERMICIDAL POWERS OF DISINFECTANTS.

According to some researches carried out by a Berlin bacteriologist, even corrosive sublimate is not the powerful and absolute germicide that it is supposed to be, and his observations bearing thereon are interesting, because only the possession of undoubted antiseptic properties can be held to justify the use of such a dangerously-poisonous agent. He found, for instance, that the vitality of anthrax spores under certain circumstances was not destroyed even after twenty minutes' immersion in a one per thousand solution of the salt, and animals inoculated therewith died of splenic fever. The inefficacy of solutions of carbolic acid has long been proclaimed, and in the course of his researches this observer found that after thirty-eight days' immersion in a seven per cent. solution of the acid, anthrax spores were still capable of growth and of infecting animals. With respect to boiling-water, one minute's immersion was totally inadequate to prevent further development, and two minutes did not preclude the cultivation of the spores in agar. It was only after five 'minutes' boiling that their career appeared to be cut short. It is a curious point that in the case of boiling-water the spores would grow after they had

proved harmless to animals, whereas with sublimate the opposite occurred. The loss of power to develop, therefore, does not involve the inability to infect animals, and the latter test has, therefore, been made the criterion of perfect disinfection. Passing over the details, he found that chlorine was by far the most reliable disinfectant and germicide, a watery solution containing a .2 per cent. of the gas destroying in fifteen seconds the infectiveness and power of growth of the bacilli. To cleanse the hands, he recommends a paste consisting of 100 parts of "chloride of lime" with 45 of water, to be smeared on as with an ointment, the hands to be then rinsed in a two per cent. solution of hydrochloric acid. The great objection to conclusions based on the foregoing observations is, that the experiments bore on only one variety of microorganism, and we have no sort of assurance that the bacilli with which we have more commonly to deal are correspondingly amenable to the various germicidal agents.—*Medical Press and Circular*, August 20, 1890.

DIPHTHERIA OF THE MEATUS URINARIUS.

At the fourth annual meeting of the American Association of Genito-Urinary Surgeons, Dr. F. Tilden Brown reported the case of a young man, 19 years of age, of delicate constitution, and free from any venereal disease, in whom diphtheria developed in the meatus urinarius after the performance of circumcision. This case, which is reported in the *Journal of Cutaneous and Genito-Urinary Diseases* for August, 1890, possesses the following points of interest:

1. The novel manner of inoculation; dirty cotton, upon a site—the meatus urinarius—not commonly the primary one in genito-urinary diphtheria.

2. The rapid development (thirty-six hours) of a considerable wax-like mass consisting wholly of various bacteria.

3. The non-appearance of disease in the circumcision wound, proving that the instruments and dressings concerned in the operation were not the channels of infection.

4. The subsequent limitation of the disease to the meatus and glans penis,—*i.e.*, first, the successful protection of the circumcision wound by carefully applied antiseptic dressings; second, the non-involvement of urethra and deeper urinary organs, and that this extension was presumably opposed by the physiological barrier of normal acid urine, Billroth and others showing that vesico-vaginal and urethral diphtheria following operation wounds and accidental abrasions requires for its development and maintenance, besides the exposure to specific infection, an alkaline condition of the urine.

A READY MODE OF PREPARATION OF ARISTOL.

The price of aristol is a serious objection to its substitution for iodoform, but in the *Répertoire de Pharmacie* for August 10, 1890, M. Boule proposes a formula, which he has adopted, as offering a ready and much cheaper method of manufacturing this compound than the process ordinarily employed.

His method is to dissolve 3 parts each of crystallized thymol and caustic soda with 5.8 parts of iodide of potassium in 50 parts of distilled water, by the aid of gentle heat. After it has cooled, the solution is mixed with 250 parts of a concentrated solution of hypochlorite of sodium (Labarraque) and well shaken. Aristol is then precipitated. In about a quarter of an hour it may be thrown on a linen filter, washed with distilled water, and dried in the dark.

HYPODERMIC ARTIFICIAL RESPIRATION.

At the meeting of the Academie de Médecine, Dr. Cobos (*La France Médicale*, August 22, 1890) proposed the hypodermic administration of oxygen under the skin, the oxygen so administered being rapidly absorbed by the capillaries, and thus acting as a substitute for the normal pulmonary oxygenation of the blood.

THE CURABILITY OF MYXŒDEMA.

Early in 1890, Mr. Victor Horsley suggested that the conditions known as myxœdema and sporadic cretinism might be made curable by transplanting healthy thyroid tissue into the victims of these diseases.

It seems now that this idea was forestalled in 1889 by Dr. Bircher, who gives an account of myxœdema and cretinoid degeneration in which most valuable results were obtained by the transplantation method. He describes a case of acute myxœdema in a female patient in whom unintentionally the whole thyroid gland was removed. Severe myxœdema (cachexia strumipriva) resulting. Dr. Bircher,

on January 16, 1889, transplanted into the abdominal cavity a portion of apparently (*ziemlich*) normal thyroid tissue from a goitre. The effect of this operation was to produce a very marked improvement, so that the patient was enabled to return to work, and the myxœdematous symptoms in great measure disappeared, only the condition of the skin suggesting the persistence of the malady. Three months later, however, it became evident that the transplanted piece of thyroid had atrophied, as the myxœdema again showed itself and progressed. A second transplantation was made, and again an improvement, and this time greater, resulted, as the patient was fairly well for nine months, even menstruation returning after amenorrhœa had persisted for over a year. At the present time the symptoms have recurred slightly, but the beneficial effect of the operation was thus indubitably established.

In the *British Medical Journal* for July 26, 1890, Mr. Victor Horsley writes that he has recently learned from Professor Kocher that in 1883 he attempted to obtain the same result by transplantation of a small portion of the gland freshly excised from a goitre, but the graft was soon absorbed. When he heard of Dr. Bircher's case, however, Professor Kocher took up the subject again early in 1889 by transplanting in two cases the half of a thyroid gland "in the abdomen," fixing it to the wall by sutures. In both the gland was "aseptically exfoliated" after some time. In three cases he put the gland loose in the abdominal cavity. The results of these cases Professor Kocher has not yet collected nor published, but he has already learnt that one patient has greatly improved since the operation.

Consideration of these results Mr. Horsley thinks thus proves that this operation should be performed not only in cachexia strumipriva, but also in myxœdema and sporadic cretinism. Whether or not, however, it is better to transplant thyroid tissue from a human goitre or a healthy gland from a lower animal can only be decided by experience.

REMOVAL OF A PORTION OF THE LIVER BY THE ELASTIC LIGATURE.

M. TERRILLON has just placed on record an interesting case in which a portion of the liver was removed by means of the elastic ligature. The patient was a woman, aged 53, who for some four years before she came under observation had suffered from a painful swelling situated in the right lobe of the liver. An exploratory puncture revealed the presence of a small quantity of liquid resembling that of an ordinary hydatid cyst. In consequence of the puncture the tumor diminished somewhat in size. However, the author performed laparotomy, making an incision along a line parallel to the false ribs on the right side, exposing the tumor, and, with the object of avoiding hemorrhage, he placed an elastic ligature around the swelling. At the end of seven days the sphacelated portion, with the ligature, was removed, the wound, of which the base was formed by hepatic tissue, being separated from the peritoneal cavity by firm adhesions. Cicatrization was complete at the end of six weeks, the patient making an excellent recovery.—*Medical Press and Circular*, September 10, 1890.

"BRADYCARDIA," OR SLOW ACTION OF THE HEART.

The cases hitherto recorded of "slow heart" (see THERAPEUTIC GAZETTE, December, 1889, and January and June, 1890) and the inferences derived from them are not altogether satisfactory, as many errors have arisen owing to the pulse having been only taken at the wrist and not compared to the apex beat. E. Riegel has made observations on one thousand and forty-seven patients whose hearts beat less than 60 times per minute. Such a condition he terms "bradycardia." He divides his cases into two large groups: 1. Physiological bradycardia. By this Riegel understands a slowing of the heart's action, caused by, or in connection with, some physiological condition. Under this head would come the "slow heart" occurring in puerperal states, also that which is found in cases of starvation, and, finally, the bradycardia which is sometimes observed as a constitutional peculiarity. Riegel here remarks that many of the cases of this kind which have been reported are greatly open to question, as some of them were obviously due to some pathological cause. 2. Pathological bradycardia. There are several varieties under this head: (*a*) The slowing of the pulse noticed in convalescence from a febrile affection. More than a quarter of the whole number of cases were of this kind. They were most commonly observed after recovery from croupous pneumonia; then, in order of frequency, after typhoid, erysipelas, and acute

rheumatism. Traube attributed this phenomenon to a state of general exhaustion. (*b*) Bradycardia in diseases of the digestive tract. In this division were three hundred and seventy-nine cases. It was most frequently noticed in affections of the stomach (ulcer, carcinoma, and dilatation). Such a result might have been inferred from physiological experiments; for in animals an increase of arterial tension with diminution in frequency of the pulse takes place when the stomach is submitted to electric, mechanical, or thermic excitation, and is caused by a reflex action of the vagus. The slow pulse of icterus probably depends on the paralyzing action on the cardiac ganglia by the bile acids in the blood. When occurring in cases of peritonitis, the bradycardia is probably of the nature of those cases described in the first division. 3. Bradycardia in diseases of the respiratory organs. In this class were eighty-seven cases. Some of them were during convalescence from pleurisy; others after hæmoptysis, or after the withdrawal of a large pleural exudation. 4. Bradycardia in cases of disorders of the circulatory organs (forty-seven cases). This phenomenon appeared in fatty degeneration of the heart and when the coronary arteries were ossified, but it was never found as a constant symptom of any one disease of the heart; it more often occurred when the heart was flabby and insufficiently nourished. 5. Slow heart in diseases of the urinary organs (sixty-four cases). Acute nephritis was the most common disease in which it was found; the slowing of the pulse was always accompanied by increase of arterial tension, and was often the earliest sign of the retention in the blood of the urinary constituents, thus denoting the commencement of uræmia. 6. Bradycardia as a result of poisoning. Riegel noticed it in three cases of lead-poisoning and in five cases of chronic alcoholism. 7. A pulse under 60 per minute was noticed in twenty-seven cases of anæmia and chlorosis, in one case of extreme anæmia after lead-poisoning, and in three cases of diabetes. 8. Bradycardia in diseases of the nervous system (ninety-three cases). In many of these cases it was thought to be due to reflex vagus action. In some instances of disease of the central nervous system it was probably caused by direct vagus action; in others Riegel ascribed the symptom to disturbances of the circulation and blood-pressure in the brain; and in the remaining number of cases no definite action could be distinguished. 9. Bradycardia in other diseases. Under this head were seventeen cases of extreme fatigue and exhaustion, one case of sunstroke, twelve cases of skin-diseases, and seventeen of painful affections of the muscles.—*Lancet*, September 13, 1890.

JAMES A. LYDSTON, M.D., Ph.G., late chief of Eye and Ear Department, Pension Bureau, Washington, D. C., has been elected to the chair of Chemistry in the Chicago College of Physicians and Surgeons.

TREATMENT OF CHOLERA.

The chief medical officer of the Spanish army has published in the *Revista de Sanidad Militar* an article on cholera, in which he indicates the treatment that is, in his opinion, most satisfactory. When cholera is epidemic all cases of diarrhœa ought to be attended to, and treated by means of large doses of subnitrate of bismuth. He would also give thirty grains or more of subacetate of lead in four ounces of distilled or boiled water as an enema after each loose evacuation. In cholera no food should be given, but plenty of acidulated water (without sugar) and ice. Enemas of seltzer-water and champagne are useful. Soup, milk, jelly, and toast-water are worse than useless as long as the kidneys do not act, as they only serve as culture liquids for the pathogenic microbe in the intestines. Bismuth is useful in helping the fæces to form more or less solid masses together with the septic products of the small intestine, and so retarding absorption in the large intestine. If the stage of asphyxia or general infection comes on, he advises recourse, if possible, to oxygen inhalations. Failing these, or as additional methods of medication, rectal etherization and a dose of antipyrin, administered either hypodermically or per rectum, may be tried. Other means, such as rubbing, hot-water bottles, hypodermic injections of ether, alcohol, caffeine,—or of morphine when there is vomiting,—though useful, must be considered entirely subordinate to those first mentioned, of which the writer regards the inhalation of oxygen as the most valuable. In order to treat the kidney-affection, which is so frequently the cause of death, warm baths and poultices must be used, and when cerebral symptoms develop ice should be applied to the head, and leeches to the mastoid processes.—*Lancet*, September 13, 1890.

—THE—

Therapeutic Gazette.

Whole Series, Vol. XIV. | DETROIT, MICH., PHILADELPHIA, PA., | November 15, 1890. | Third Series, Vol. VI. No. 11.

CONTENTS.

Original Communications.

PAGE

On the Treatment of Affections of the Stomach. By Professor Dujardin-Beaumetz..... 721
The Climate of Southern California: Its Effect on Chronic Bronchial Catarrh with an Asthmatic Tendency. By F. Gundrum, M.D..... 727
Administration of the Digestive Ferments. By John Aulde, M.D..... 732
Water as a Therapeutic Agent. By W. E. Scott, M.D..... 738
The Etiology of Cholera Infantum, and its Treatment by Zinc and Sodium Sulpho-Carbolate. By Leonard G. Broughton, M.D..... 741

Leading Articles.

The Old and New Hypnotics..... 745
Antiphlogistics..... 747
Pharmacological and Therapeutic Properties of Phenyl-Urethan, or Euphorin 750
The Treatment of Syphilis with Hydrochloric-Glutin-Peptone-Sublimate..... 751

Reports on Therapeutic Progress.

Hydroxylamine..... 744
The Analgesic Value of Antipyrin Intra- and Post-Partum..... 753
Protopine—A New Opium Alkaloid..... 754
Subcutaneous Injection of Water and its Therapeutic Uses..... 755
The Treatment of Burns..... 755
Operations on the Prostate..... 756
Turpentine Inhalations in Diabetes..... 756
The Curability of Cancerous Tumors by Interstitial Injections of Bichloride of Mercury..... 756
The Mechanical Treatment of Chronic Dyspepsia..... 757
Picrotoxin and its Uses..... 758
Diuretic Action of Theobromine and Diuretin..... 759
The Galvano-Cautery in Purulent Ophthalmia..... 760
Use of Condurango and Condurangin..... 761
Antipyrin and Bromide of Ammonium in Epilepsy..... 761
The Action of Catha Edulis..... 762
Aristol in Affections of the Skin..... 762
The Physiological Action of Cocaine..... 763
The Nature and Treatment of Vertigo..... 764
Antagonism between the Manners in which Iodine and Salicylate Preparations are absorbed by the Articulations, Exudations, and Transudations 765
Epsom Salts in the Treatment of Acute Dysentery..... 766
The Physiological Properties of Hypnal 767
Therapeutic Value of Sulphate of Cinchonidine..... 768
The Action of Caffeine, Morphine, Atropine, Ergotin, and Digitalis on Arterial Pressure..... 768
Cardiac Diseases..... 769
The Treatment of Delirium Tremens..... 770
The Free Acid of the Gastric Juice during Digestion..... 770
The Comparative Value of the Biniodide and the Bichloride of Mercury as Surgical Antiseptics..... 771
Administration of Morphine by the Nostrils..... 771
Anæsthetics in Natural Labor..... 771
Effect of Certain Substances on the Red Corpuscles..... 772
Dietetic Rules in Diseases of the Digestive Organs..... 772
The Etiology and Treatment of Tetanus 773
Communicability of Diabetes..... 773
Passage of Tubercle Bacilli through the Intestinal Canal..... 774
Physiological Action of Caffeine..... 775
The Action of Exalgine..... 776

Reviews..... 776

Correspondence.

Berlin Letter..... 781
Paris Letter..... 783
Trade-Marked and Proprietary Medicines..... 785
Rare Complication of Whooping-Cough 786

Notes and Queries.

The Future of Pharmacy..... 786
Mississippi Valley Medical Association 788
Uric Acid in the Blood..... 788
A New Theory of Sea-Sickness..... 789
Keratin..... 789
Atropine as an Antidote to Potassium Cyanide..... 790
Bonducin as a Febrifuge..... 790
Case of Strychnine-Poisoning..... 790
A Two Hundred Thousand Dollar Libel Suit..... 790
The Presence of the Diplococcus of Pneumonia in the Milk of a Woman affected with Pneumonia..... 791
Scarlatina without Pyrexia..... 791
Sterilized Milk..... 791
A New Excipient..... 792
Æthyl Bromidum..... 792
Chloroform and Phthisis..... 792
Treatment of Ingrown Nail..... 792

Original Communications.

*ON THE TREATMENT OF AFFECTIONS OF THE STOMACH.**

LECTURE III.—ON CANCER OF THE STOMACH AND ITS TREATMENT.

By Professor Dujardin-Beaumetz,† Paris, France.

GENTLEMEN:—It may appear strange to some of you that I devote an entire lecture to the treatment of a disease reputed to be incurable. The reasons which I have to allege for so doing are twofold,—first, that in our practice we cannot always distinguish the curable from the incurable; and, second, that it is always our duty to do our best for our cases, whether they are cancerous or not. But the most weighty reason of all is, that the diagnosis of cancer and the problems connected therewith are points of the greatest interest in the clinical study of diseases of the stomach. Lastly, in the consideration of the subject, we shall find opportunities for testing the new methods of which I spoke to you in my last lecture.

Formerly the diagnosis of cancer of the stomach was regarded as simple and easy; no one doubted his ability to separate from the other chronic affections of the stomach cancer of that organ. To-day we are far from having the same assurance, and it may

* From advance sheets, revised by the author (translated by E. P. Hurd, M.D.). Lectures delivered in Cochin Hospital, Paris, France.

† Member of the Academy of Medicine, Physician to the Cochin Hospital, Paris, France.

be truly said that, in a great number of cases, it is not only difficult to diagnosticate cancer, but it is almost impossible to make a diagnosis.

This results from many causes, but especially from our ignorance as to the nature of cancer, and, in particular, of cancer of the stomach. Look over the works of our most eminent pathological anatomists,—those of Professor Cornil, for instance,—and you will see that all are agreed in assigning very little value to the word *cancer* itself, which seems destined to disappear from nosology. It indicates only a malignant affection of an organ, but the forms are so varied, the clinical evolutions so different, that it is difficult to group under the same title the divers affections to which we have been in the habit of applying the term *cancerous*.

With regard to cancer of the stomach, in particular, we are ignorant of its mode of development, and it is impossible to include in the same clinical description those encephaloid tumors which bud with extreme rapidity from the surface of the mucous membrane and fill the cavity of the organ and those atrophied cancers, scarcely visible to the naked eye, which accompany thickening and induration of the walls of the stomach.

It is, nevertheless, probable that all these forms of cancer have for their starting-point the epithelium of the gastric glands, and that this epithelium is the place of origin of those prolongations, veritable malignant nodules, which invade successively the other tunics of the stomach. But what I need to remind you of is the richness of this organ in lymphatics, which explains the propagation of cancer to the neighboring organs, and in particular to the glandular system.

If pathological anatomy furnishes us only obscure data of information on this question, let us see if clinical medicine is any better able to solve the problem of diagnosis and prognosis, and, for this object, we will follow the order which we employ in the examination of the patient, beginning with the general aspect of the patient, and continuing with the commemorative and functional signs, to terminate by the physical signs.

I will endeavor to be as brief as possible in the explanations into which I am about to enter, contenting myself by referring you to the writings which I have already published on the subject,* and to the thesis of one of my best pupils,—Dr. Deschamps, of Riom,—a thesis very cleverly written and based on facts gleaned in my service;† lastly, to a more complete general review recently published by Gaston Lyon.‡

I pass now to the study of the different diagnostic signs of which I have spoken.

The aspect of the patient may give you a hint as to the disease from which he is suffering, for of all cancers it is cancer of the stomach which is oftenest accompanied by a cachectic state, characterized essentially by emaciation and by the straw-yellow tint of the face. We may even say that in certain old people affected with latent forms of cancer of the stomach it is often the only symptom which is observed. But this cachexia is only the manifestation of a bad state of the nutrition, and you well know that it may be wanting at the onset of cancer, or even that it may exist in other affections of the stomach besides cancer, and, lastly, that it may manifest itself in affections foreign to this organ; so that this sign has a certain value, but this value is relative.

The age of the patient furnishes indications. It is chiefly after the age of fifty years that cancer of the stomach manifests itself, and the greater number of cases occur between the years of fifty and seventy. It is extremely rare before the age of twenty; and in an interesting thesis of Duzan,§ of one hundred and eighty cases of cancer in children, there was only one of cancer of the stomach; and the facts gathered by Marc Mathieu, and published in a thesis presented to the Faculty of Lyons, show that this case is altogether exceptional.‖

Hence mistakes of diagnosis have probably always been made in those cases of cancer of the stomach which have been reported as occurring in young people or in children.

The duration of the disease may also furnish certain useful indications. Although I can assure you that cancer of the stomach may run its course much more slowly than is generally thought, it is, nevertheless, true that, when a patient has been complaining ten years of an affection of the stomach, we ought to exclude the idea of cancer. At the same time, do not forget that we may see cancer graft itself on an old affection of the

* Dujardin-Beaumetz, "On Cancer of the Stomach" in "Diseases of the Stomach and Intestines." New York, 1886.

† Deschamps (de Riom), "Diagnosis and Treatment of Cancer of the Stomach" (*Thèse de Paris*, 1884).

‡ Gaston Lyon, "Diagnosis of Cancer of the Stomach" (*Gaz. des Hôpitaux*, February 15 and 22, 1890).

§ Duzan, "Cancer in Children" (*Thèse de Paris*).

‖ Marc Mathieu, *Thèse de Lyon*, 1884.

stomach. Physicians have seen, and I have myself observed, cancers of the stomach develop around a cicatrix of an ulcer of the stomach. A person may have had chronic gastritis, and this shall afterwards be followed by carcinoma.

As you see, all this detracts very much from the diagnostic value which is attached to the duration of the disease.

The functional troubles furnish indications a little more precise; the pain, for instance, which in cancer of the stomach has no great diagnostic value. Physicians have seen cancers run their course and terminate in death without any pain, while certain forms of painful dyspepsia are accompanied by extremely severe pain. Pain exists ordinarily when there is ulceration of the stomach, but this ulceration is seldom the result of a cancerous process. The pain is sometimes caused by attacks of peritoneal inflammation around tuberculous masses.

I may say as much for the anorexia. Loss of appetite is met with in a great number of affections of the stomach, and that of cancer has nothing special connected with it. I may add that there are patients in whom the appetite remains good till the last period of the disease. I have before cited the case of a man who was an occupant of one of our wards, who, to the last day of his life, demanded and digested foods of a relatively indigestible character,—such as egg salad, lobsters. The autopsy revealed the presence of a large, sheet-like cancer of the stomach (*cancer en nappe*).

For a long time vomiting of blood, and in particular coffee-ground vomiting, has been considered as characteristic of cancer of the stomach.

This is a mistake, for these vomitings indicate but one thing,—the presence of ulcerations of the mucous membrane of the stomach; and as there are cases of gastritis with ulceration of the mucosa, it is plain that these vomitings may take place apart from cancer. But bear in mind that, when they are often repeated, they constitute one of the symptoms which serve to support the diagnosis.

As for vomitings of food, they may exist or be wanting; they exist whether the cancer be situated at the cardia or at the pylorus. They may be wanting when these two orifices are intact, whatever may be the extent of the cancer. The only characteristic vomitings are those which are produced at the advanced periods of the disease, and when the patient vomits, chiefly in the morning, fasting, a cancerous ichor of extremely fetid odor.

I pass now to the local examination of the patient.

This examination enables us to note the state of the stomach and abdomen, and especially the presence of a tumor.

As for the state of the stomach, all depends on the seat of the cancer. If this obliterates the cardia, the stomach contracts, and its size does not exceed that of the large intestine; the belly is excavated, and to such a degree that the intestinal mass disappears almost completely. Is the cancer seated at the pylorus? There is enormous distention of the stomach, the *bruit de clapotement* (splashing sound) is heard, there is thickening of the muscular coat, and the contractions of the stomach are visible to the naked eye. But when the cancer is seated at the lesser curvature, or when it does not close the orifices, the stomach may preserve its ordinary size and form.

It is in the existence of the tumor and its detection that we find the most important sign of cancer of the stomach. In fact, when you plainly feel a firm, nodular tumor, slightly painful to pressure, associated with general disturbances of nutrition, and the functional troubles of which I have spoken, you are generally warranted in affirming the diagnosis of cancer, and yet what chances of mistake! First of all, we have frequently a false sensation of tumor, due entirely to contraction of the recti abdominales muscles. You are all familiar with those fibres which cut transversely the recti muscles. When the patient experiences a pain in some part of the abdomen, he involuntarily contracts these segments of the recti muscles, which then give to palpation and percussion the sensation of a limited and irregular tumor. Moreover, any of the viscera of the abdomen may be the starting-point of tumors, benign or malignant.

But, while on the subject of diagnosis, I may remind you that there are benign tumors that may be confounded with cancer. There is, first of all, right renal ectopia. As this ectopia always accompanies a dilatation of the stomach, which itself produces functional troubles of digestion, you readily understand how the mistake has been made of confounding a tumor of this kind with cancer of the pylorus. Then we may have fæcal tumors, seated in the transverse colon or at the angles of the colon, and on a level with the stomach. Lastly,

there are certain tumors of the liver relatively benign, as hydated cysts, which may be mistaken for gastric cancer. During this local examination you will note any œdema that may exist, and see if there be present *phlegmatia alba dolens*. You all know the saying of Trousseau *à propos* of Soubeyran. There was a long discussion respecting the nature of the gastric affection from which the latter was suffering. When it was told to Trousseau that Soubeyran had phlegmatia alba dolens, he exclaimed, "This is all that I need to warrant me in affirming that he has cancer of the stomach;" and the event proved that he was right.

This phlegmatia has not the value that Trousseau attributed to it. It accompanies various cachectic states, and may exist apart from them; it has, then, only a secondary importance.

This is not the case with the appearance of indurated glands in parts more or less distant from the stomach. In 1886, Troisier* showed the value of this symptom. Although this distant adenopathy may be symptomatic of any of the cancerous affections of the thorax and abdomen, it is none the less true that it is frequent in gastric cancer, since it has been noted in fourteen out of twenty-seven cases.

These glands, which are hard and nodular, are generally found in the subclavian triangle at the middle third of the clavicle. Sometimes they are seen in the axilla or in the groin.

Unfortunately, they only manifest themselves in the advanced periods of the disease, at the time when other signs more important are apparent.

As you see, gentlemen, no one of the symptoms of cancer of the stomach is absolutely pathognomonic. It is from the sum of these symptoms that the diagnosis should be made; and yet, even in these circumstances, you will often find reason for hesitating; and in order to overcome this hesitation, you will be obliged to have recourse to other signs, some associated with the direct examination of the gastric juice, others with the examination of the urine.

It was Van den Welden who, ten years ago, first called attention to the disappearance of free hydrochloric acid from the gastric juice in cancer of the stomach, and the first trials made by Riegel confirmed the remarkable value of this sign, as he never found in cancer of the stomach free hydrochloric acid. But soon other observations appeared, and in particular that of Ewald, of Cahn, and of Mering, which showed that cancer might exist with conservation of free HCl.

To-day the question seems to be decided, and the diagnostic value of the absence of free hydrochloric acid in cancer of the stomach is absolutely secondary, and this is the reason: First, we have learned, as Ewald, confirmed by Hayem, has shown, that in the physiological and normal state man has no free hydrochloric acid in the stomach; then, that a great number of affections of the stomach may be accompanied by absence of this acid. So, when in a patient supposed to be affected with cancer of the stomach you find hydrochloric excess, and this, after repeated examinations, the conclusion is forced upon you either that the patient has round ulcer of the stomach,—a disease characterized by such excess—and it is the only disease where "hyperchlorhydria" is constant and well pronounced,—or that you have cancer of the stomach complicating round ulcer. Rommelâre was the first, in 1883, to lay down this law: that when the quantity of urea excreted in twenty-four hours remains for several days above twelve grammes, you must exclude the idea of a malignant tumor. He has applied this datum to all malignant tumors, including cancer of the stomach.

I took the first opportunity, after reading the paper of Rommelâre, to test this law in reference to cancer of the stomach, and you will find in the thesis of my pupil Deschamps, of Riom, the result of my researches. This result was as follows: If, in the majority of cases of cancer of the stomach (and this is especially applicable to the advanced periods), the law of Rommelâre is found to be confirmed, it is because in these cases nutrition is profoundly impaired; for this deficiency of urea-secretion (hypoazoturia) is not peculiar to cancer, but characterizes all pathological states which profoundly disturb the economy and modify nutrition; and if, in cases of cancer of the stomach, this hypoazoturia is met with frequently, it is because it is an affection which, by the disorder which it inflicts on the functions of the digestive tube, the most rapidly depresses nutrition.

Gregory (*vide* thesis), Albert Robin, and Kirmisson have arrived at the same conclusions.

To sum up: The diminution of the figure of urea below twelve grammes in the twenty-four hours is but a complementary sign, which

* Troisier, *Soc. Méd. des Hôp.*, 1886.

indicates chiefly the general failure of nutrition in the patient.

As you see, gentlemen, the new signs which were supposed to be so pathognomonic have not the diagnostic value which has been attributed to them, and we are still compelled in diagnosticating this affection to base ourselves on the symptomatic and clinical aggregate which the patient presents.

In certain cases the diagnosis will be plain enough, while in others you will be compelled to suspend a positive opinion, and the most careful and painstaking will sometimes make mistakes. I may be allowed to mention two cases of erroneous diagnosis which are matters of history. The one is the case of Milne Edwards, the celebrated physiologist. At the age of forty years he was pronounced by one of the most competent authorities of the day to be suffering from cancer of the stomach; he, however, did not die till forty years afterwards. The other case was that of Claude Bernard, who, at a certain time of his life, was believed to have cancer of the stomach; this proved to be a mistake, and he afterwards died of a uræmic trouble.

The prognosis of cancer of the stomach is based entirely on the nature of the cancer and its seat.

Unfortunately, from the point of view of the nature of the cancer, we have but vague data. We know only that certain cancers make rapid progress, while others have a very slow course, and, in his thesis, "On Precocious Cancer," Marc Mathieu has mentioned numerous cases of these forms of cancer.

But what it is important to know is the slow forms. There are atrophic cancers of the stomach whose development may be very tardy, and which, singularly enough, may present such ameliorations in their course that one may be led to exclude the idea of cancer; and, in this connection, I may cite the following curious fact: We admitted to Cochin Hospital a woman who had all the symptoms of cancer of the stomach, and the presence of a tumor confirmed the diagnosis. We subjected the patient to an appropriate dietetic regimen. Her condition improved, she regained weight, the digestive functions were restored, and she became, in fact, so much better every way that we thought we had made a mistake in our diagnosis. This improvement lasted almost a year; then the digestive functions were again disordered, and she re-entered the hospital. The day of her ssion she was taken with vomiting, with intense pain, and succumbed in several hours. At the autopsy, we found a cancer in the pyloric region, not, however, involving the pylorus; this cancer had ulcerated, and had caused perforation of the stomach.

I may also mention the case of a patient whom I saw at Saint Denis, with Dr. Leroy, of Barres. This patient had been following for ten years a milk regimen, which had been prescribed for an affection of the stomach, supposed to be cancerous. I made my examination, and, considering the duration of the disease, I was disposed to doubt the existence of cancer. The patient died a year after, and the autopsy showed the disease to be unmistakably cancer.

But what renders the diagnosis so difficult, is the possibility of the development of cancer on the cicatrix of a round ulcer, and the observations of Hanot, of Debove, of Landouzy, of Muschir, are in this connection of exceeding interest.

If our knowledge as to the nature of cancer, from the point of view of prognosis, is very deficient, we certainly have more exact information respecting the prognostic signs derived from the seat of the cancer. It is, in fact, quite easy to understand that a lesion of very little extent, affecting either the cardia or the pylorus, but obliterating these orifices, may entail functional disorders so grave that the case may be rapidly fatal.

Of all cancers of the stomach the most grave is that of the cardia, for it renders feeding of the patient impossible, and death by starvation soon ensues. Here the diagnosis is generally easy; the age of the patient, his cachectic state, the presence of indurated glands in the supra-clavicular region, lastly, direct examination by the œsophageal tube, will furnish precise indications.

Next, in point of gravity, as far as prognosis is concerned, is cancer of the pylorus. Here the local symptoms are the inverse of those observed in cancer of the cardia. While in the latter affection the stomach becomes atrophied, so as to disappear almost altogether, and the intestinal mass itself undergoes a progressive shrinkage, so as to give to the abdomen an excavated aspect, in cancer of the pylorus, though there may exist atrophy of the intestinal mass, the stomach takes on an enormous enlargement. Not only is there dilatation of the stomach, but there is thickening of its muscular layers; and it is in these cases that one may see mapped out through the abdominal walls the automatic movements of the stomach. The

patient has vomitings, infrequent but very abundant, in which is seen food eaten several days before. Lastly, it is possible to find in the region of the pylorus an induration corresponding to the part affected, especially if you take care to have the patient make a full expiration, so as to depress the liver and the pylorus.

As it has been proved that the stomach may absorb liquids, and even peptones, necessarily the duration of life is longer in cancer of the pylorus than in cancer of the cardia. But pyloric cancer is still a very grave form, notwithstanding the conservation in certain cases of pepsin glands. At the same time, do not forget that there is often concomitant atrophy of the mucous membrane, and that this destruction of the pepsin glands augments still more the functional troubles caused by cancer of the pylorus, even when the latter is of but little extent.

Next in order comes that form of cancer which affects well-nigh the totality of the stomach,—cancer in mass, or *sheet cancer*,—whose presence is sometimes compatible with the apparent conservation of the gastric functions. This is a latent form of cancer, which is sometimes seen in old people.

Lastly, from the point of view of prognosis, the least grave of the cancers of the stomach is that which infiltrates the lesser curvature without obliterating the cardia or pylorus. It is also the form which is most difficult to diagnosticate, for in these cases it is impossible to perceive the tumor. It is, moreover, the kind of cancer which is least likely to be attended with perforations.

Such, in brief, is the prognosis of cancer of the stomach. It remains for me, in concluding this lecture, to speak to you of the treatment, for even if you have the certainty of an irreproachable diagnosis, it is your duty to give your cancerous patient the benefit of the best possible treatment, and as a mistake in diagnosis is always possible, there is hope that your patient may be benefited more than you expect; and, indeed, patients have now and then got well whose condition seemed hopeless. I may remind you of a case, which is to-day a matter of public talk, the subject of which is a coach-maker, well known in Paris, who was cured of a so-called cancer of the stomach, as reports say, by a quack prescription, in which a principal element was wearing *shirts of a certain color;* an appropriate dietetic regimen was, however, insisted upon. You should, then, never despair of the recovery of a patient affected with cancer of the stomach. If you succeed, it is a proof that you were mistaken; if you fail, it is because your diagnosis was correct.

The treatment includes several particulars,—a general treatment, which is applicable to the cancer when it does not affect the orifices, and a special treatment for each of the varieties which I have mentioned, cancer of the cardia and cancer of the pylorus.

To meet the first indications it is necessary to practise antisepsis of the stomach, and order an appropriate dietetic regimen.

Antisepsis of the stomach should have for its basis salicylate of bismuth, naphthol, or salol. You may give before each meal some one of the antiseptic powders, whose formulæ I have given you on several previous occasions. Formula No. 1 consists of salicylate of bismuth, English magnesia, and bicarbonate of sodium, of each five grains, in one powder; to be given in capsule before meals.

Formula No. 2 consists of salicylate of bismuth, beta-naphthol, and charcoal, of each five grains, in one powder; to be taken as above indicated.

Formula No. 3 consists of salicylate of bismuth, salol, and bicarbonate of sodium, of each five grains, in one powder; also to be taken in capsule, before meals.

The second indication is to alleviate the often atrocious pains of the disease. For this all the opium preparations may be employed. You will use then the English black drops (acetum opii), paregoric elixir, opium pills, especially injections of morphine, which you will associate with atropine, injecting, for instance, a hypodermic syringeful of the following solution:

℞ Morph. mur. (or sulph.), 10 centigrammes (1½ grains);
Neutral sulphate of atropine, 10 milligrammes (⅙ grain);
Sterilized water, 20 grammes (5 drachms). M.

If the injections of morphine should have the evil result of producing morphiomania, this is of comparatively little consequence in a carcinomatous patient, and in these incurable and painful affections we cannot get along without this incomparable analgesic.

Then you will indicate the dietetic regimen; this should be absolutely vegetarian. It is, in fact, a rule of therapeutics to let a sick organ rest. The stomach is an organ doomed to almost constant activity; but what we can do is to reduce to a minimum the work of digestion, and this is the more indicated, since, in the majority of cases of cancer, there is a diminution in the digestive

activity of the gastric juice, and you will attain the desired end better with a vegetable than with a mixed diet.

When the cancer is seated at the cardia, the indications are the same as in stricture of the œsophagus; that is to say, apart from the surgical procedures,—of which I shall further speak,—it will be necessary to nourish the patient with liquid or semi-liquid food. It is in these cases that the meat-powders render us important service.

Cancer of the pylorus, when it is accompanied by dilatation, may be treated by lavage of the stomach. I do not mean by this that lavage is curative, but it enables us to *dress* the mucosa, to rid it of ichorous products secreted by the cancer, and even to calm sometimes the gastric pain provoked by the ulceration. You can employ naphthol solutions, 1 to 1000, for lavage, or the mixtures of salicylate of bismuth and salol, of which I have before spoken.

As for the question of surgical interference, it is sure at some time to come up in connection with cancer of the pylorus or the cardia. For pyloric cancer, ablation of the pylorus—gastrectomy—has been recommended. This operation, proposed for the first time by Péan, was formerly attempted by several surgeons, but was speedily abandoned because of the grave disorders which it entails. Billroth has proposed the much more sensible operation of establishing a communication between the stomach and a point of the intestine near the duodenum. He has thus perfected the operation advised and executed for the first time in my service by Surmay, of Ham, who made an opening from the stomach into the duodenum.

As for cancer of the cardia, besides catheterism, whether permanent, as proposed by Krishaber, or temporary, by intubation of the œsophagus, recently counselled by Berger, besides electrolysis, advised by Fort, surgeons have proposed the operation of gastrotomy,—*i.e.*, the formation of an artificial fistula, through which food may be directly conveyed to the stomach.

All these surgical procedures, however skilfully they may have been performed, have given but sorry results in cancer of the stomach, for such operations can only be proposed at an advanced period of the disease. The patient is then in a condition of inability to rally from the surgical traumatism, and even if he does rally, he generally obtains a new lease of life for only a few months — a few weeks, for, as pathological anatomy has shown, cancer of the stomach is rarely solitary, and in the majority of cases there are concomitantly cancers in other viscera, whose progress speedily entails the death of the patient.

Such are the considerations which I desired to present in relation to this interesting subject, and I pass to the study of a disease which has latterly tended in a measure to revolutionize gastric pathology, — namely, dilatation of the stomach.

THE CLIMATE OF SOUTHERN CALIFORNIA: ITS EFFECT ON CHRONIC BRONCHIAL CATARRH WITH AN ASTHMATIC TENDENCY.

PERSONAL EXPERIENCE OF NEARLY THREE YEARS.

By F. Gundrum, M.D., Escondido Valley, Cal.

IN this article I wish it to be understood that I shall allude only to the effect of this climate on my own affection, and also that my experience has been limited within San Diego County, and not exceeding a distance of seventeen or eighteen miles from the great Pacific.

At some future time I hope to be able to give to the profession a more extended account, or, to speak more correctly, an account of a more extended research.

Scarcely anything is known of this region (San Diego County), except on the immediate coast, for so laborious and difficult and aggravating are the means of transportation, and so crude and unpleasant the accommodations in the interior, that very few have the courage to undertake the trip.

Still, from what little experience we have, I believe I will not be saying too much that, when convenient and pleasant methods of transportation are provided, and proper establishments erected for the care of invalids, this section of country will be second to none on the globe.

The therapeutic value of climate has received more and more attention for the last twenty-five years, and its benefits are more and more clearly seen and taken advantage of; and as our knowledge is extended and more accurate and correct observations are made as to the adaptability of the different climates to the different affections, the more benefit will be derived from this therapeutic agent.

There is, in many instances, a tendency, especially if financially interested, to give a

colored and one-sided view of the climate of which the person is speaking or writing. I am certain that this mistake has been made in respect to this region, as well as to many others. I have seen many persons that have come to this coast, either from their own choice or at the advice of their physicians, who were made much worse; and I have seen people come here that were perfectly well East, who acquired and remained in poor health until they returned East again.

I am thoroughly convinced that we need more clinical observations in regard to the effect of the climate on individual diseases; not only that, but the stage of the diseases and the peculiarity of the individuals.

It is a pretty well-established truism that what is curative in one person is not so in another, and this is true in climate as well as in reference to articles in the materia medica.

I have been led to give my personal experience in this climate in the hope of being of some benefit to the medical practitioners who may desire to give their patients the benefit of climate, especially those of the eastern portion of the United States. It is as important to know where not to send a patient as it is to know where to send him.

I desire, before entering upon my real task, to give a brief clinical history of my own affection, which may possibly be of some use in connection with the whole subject.

My maternal grandmother died at the age of 56 of cardiac dropsy. My paternal grandmother died of some chronic pulmonary trouble at the age of 65. Both my grandfathers died extremely old. My father died at the age of 46 of an accident, and my mother at the age of 71 of acute phthisis. Both my parents were remarkably strong and healthy until their last illnesses. At five years of age (before which time I was very healthy) I contracted some acute pulmonary trouble, of which I was sick eight or ten weeks. After that I was and remained a little "wheezy."

I became very healthy, with the exception of a little shortness of breath on running or hard exertion, and wheezy when I took a cold. While attending medical lectures at Ann Arbor, in 1866 and 1867, I had my first severe attack of bronchial catarrh, which remained about four months.

After graduating, in 1868, and serving in the Cincinnati Hospital for one year, I started practice in Ionia, Mich., where I remained until the close of 1887.

The exposure incident to a large country practice, coupled with a considerable amount of carelessness, gradually developed the condition for which I was forced to change climate. Under constant exposure during the inclement fall, winter, and spring months, my attacks of bronchial catarrh became more frequent and stayed with me longer, and the irregularity of my meals added another unwholesome friend in the shape of dyspepsia.

In February, 1875, I had a severe pneumonia (acute lobar), and in 1877 I got a dose of sepsis from a surgical wound, which came near being very serious. In February, 1880, while making a post-mortem for the late Dr. C. H. H. Sayre, in New York, I accidentally wounded myself, and had a narrow escape after a long illness. My health remaining poor for over a year, I again settled in my old field of labor, and gradually grew better, but never my former self.

My bronchial trouble gradually gained on me, to which was added a decided asthmatic tendency. My lungs now took on an emphysematous condition, which gradually grew on me.

The last two years of my stay in Michigan it was very hard work to exert myself much; going up a slight ascent or climbing a short pair of stairs would "take my wind," and I could be heard to "wheeze" for a rod or more. I lost my ruddy complexion, turned sallow, and my heart began to show signs of weakness, and I concluded it was about time to try a different climate.

It may be as well to also state that my weight went up to two hundred and four pounds after five or six years, and remained so, and that the last seven or eight years small patches of eczema showed themselves about my fingers, palms, and anal orifice.

Being somewhat undecided where to go, a letter from an old friend and also a medical practitioner, from San Diego, Cal., induced me to come to the Pacific coast. I arrived in the beautiful city of San Diego December 27, at the height of the great boom. After a night spent in the city, we repaired to the house of my friend, two and a quarter miles east. We arrived during and in the middle of the rainy season. Everything was saturated with moisture,—earth and air, and everything else. The great boom had exhausted the coal, and wood was scarce and wet. Our clothes felt damp on our bodies, the bed felt wet when we retired, and our clothes in the morning felt as if they had been lying in water all night. The result was I took a severe bronchial attack. My little daughter, aged 5, had a severe attack

of acute bronchial inflammation. My wife, who remained free from any sort of bronchial trouble, had a rather severe attack of catarrhal inflammation; and my boy, 7 years old, did not escape. We stayed here some six or seven weeks, when we moved to Coronado Island, just across the bay from San Diego. Here things were much "moister," and I could not stay at all. We then moved into the city, and took rooms on a considerably elevated position on the second floor on the south side of the house. During the damp weather we kept a small fire in the room most of the time. We got along much more comfortably. After a stay of three months here I removed to a still more elevated position, where I remained for over a year.

The first thing that struck me very forcibly was that our bronchial troubles hung on in spite of remedies that helped us very quickly in Michigan, and this was fully substantiated in my treatment of other cases afterwards, and was noted by other practitioners.

Many persons visited San Diego during this winter, some to ride on to fortune, some to combine business with the beauty of the climate, and many came entirely for their health. Many died during this winter (1887 and 1888) from bronchial and pulmonary inflammations. This was carefully and cautiously dealt with by the local press, for fear the intelligence, if it should find its way East, might damage the city's present and future interests. It is nothing more than fair to state that some of the deaths were, no doubt, due to carelessness, and others to the lack of proper accommodations.

As spring and summer came on I improved some, but mostly as to the functions of my stomach. My cough grew some less, as well as expectoration, and I was in hopes that as the summer advanced my improvement would make considerable progress.

Although I improved some during the summer, I did not gain much strength. I breathed somewhat easier, which, I think, was principally due to a diminution of gas in my stomach, which gave my diaphragm free play. During the summer it seemed impossible to keep from taking cold. After a walk or other slight exercise, if I sat down to rest, or jumped on a street car, it would not exceed from three to five minutes until I would be sneezing, and feel a congestion of the nasal mucosa coming on. I opened an office, and started in practice, and found, to my surprise, that I was much more frequently consulted for acute catarrhal troubles in this extremely mild climate than I was in Michigan during the same (summer) months.

As winter, or the rainy season, came on again my old friend returned. Taking frequent colds, the catarrhal symptoms returned, attended by the "wheezing." I might here mention that I never had a true spasmodic seizure. I was learning by self-experience and also from old residents that extreme care was necessary to keep from "catching cold."

I treated quite a number of acute lobar pneumonias, also catarrhal pneumonias in children, and while I can't say they ran a more violent course than in Michigan, I can say, with positive certainty, that they ran a more asthenic one. Such cases of catarrhal troubles of the respiratory tract as are usually seen in office practice (I mean those only of a more or less acute variety) I found were treated with much less satisfaction than I had been used to. In my practice in the East one or two office visits, at the outside three or four, sufficed to allow the patient to dispense with his medical adviser, but not so here in the majority of cases. I also discovered the class of remedies I had used East were of little benefit here, and, in fact, in many cases actually made matters worse.

The best was a tonic course of treatment with extreme care on the part of the patient to keep from adding to his disease by "catching fresh and repeated colds." But quite a proportion of patients would not get well with any remedies, and had to be sent to the interior, — to Romona, Julian, and other places, — to a higher altitude and dryer climate.

This was the experience not only of myself, but quite a number of other physicians with whom I talked. Most of these patients got relief in a very few days, soon recovered, and returned. Others had to spend a longer time for complete restoration.

During the latter part of November, 1888, a friend invited me to take a trip to Romona, situated in the Santa Maria Valley, thirty-five miles northeast of San Diego, about twenty-three or twenty-four miles from the Pacific Ocean, with an elevation of about fourteen hundred feet.

We only remained two days, but my breathing became much relieved, and my "spirits" better, and I was sorry I could not stay longer. On our return, when we got up on the high mesa (foot-hills) east and about seven or eight miles from San Diego,

I felt a decided change come over me. Here the ocean breeze had a fair sweep at us, and I soon felt its effects. I began to feel somewhat chilly, and immediately put on an extra garment. Then I began to sneeze, and, after a short time, there was a mucous discharge from my nose. After riding for a mile or a mile and a half I began to feel a burning sensation in my pharynx and larynx, which extended down the trachea and larger bronchi. I soon began to cough, and while I wasn't blowing my nose I was coughing.

Having gained nothing in strength and very little in relief to my troubles of the respiratory apparatus in San Diego, and feeling so good and light in breathing and spirits in two days' time at Romona, and having a demonstration in my ride home from the interior so cogent, so patent, that the ocean air was a constant irritant on my respiratory organs, I determined to seek the interior of the country for relief.

I myself and a medical acquaintance who came to the coast for incipient phthisis came to this valley in the latter part of 1888. We had heard much of its beauty, fertility, and great sanitary superiority. I might here digress enough to say that all places in Southern California, in the minds of the inhabitants, have a considerable advantage over their neighbors in these respects, and the only way you can find out for yourself is to settle down.

As there was no other place in the interior of the country that offered as good advantages socially, educationally, and otherwise, we purchased some land, and started on our new career. I might say while digressing that the greatest and most important difference between ranching—or rather putting out orchard and vineyard, and the other labors and duties incident to ranch life—and the practice of medicine is that in ranching your mistakes stare you in the face, and you pay dearly for them yourself, while in the practice of medicine you bury them and the other fellow pays for them. I would like this to be considered by the profession before they turn "ranchers."

The muscular exercise incident to my new departure soon reacted on me very favorably. My stomach soon assumed a functional capacity that surprised the cook. My muscular system increased rapidly in power. For the last six or seven years, I might say since my septic attack in New York City, my heart had gradually lost power, and my pulse-rate had gone up from 66 to 68 per minute to 84 to 90, while the pulse at the wrist had lost in vigor and force. My pulse gradually gained in volume and force until it reached its normal condition again. My cough and expectoration became less, my breathing better, and new "attacks" became much less frequent. This improvement continued during the spring and summer of 1889, and I became very sanguine that I should become a well man again, excepting the emphysematous condition of my lungs. In this I was encouraged also by knowing of several other cases that were very much benefited or cured here, and by my little daughter, who had frequent attacks of bronchial catarrh at San Diego, recovering entirely. Again, my son had nasal catarrh almost from birth, which gradually made its way up the Eustachian tubes and into the middle ears, producing a considerable deafness, which grew worse from year to year. This became somewhat better at San Diego the first nine or ten months, but came to a stand-still, and then gradually receded, in spite of treatment, but after coming here he gradually grew better. Catarrhal symptoms grew less and the hearing better, and he has entirely recovered without treatment. As further evidence that the climate in the vicinity of the Pacific Ocean is inimical to my mucous membrane, I will state that for the first year after coming here every time I approached the ocean within three or four miles I began to sneeze and feel that "raw" feeling in my respiratory tract. This effect is also produced when occasionally we get a pretty strong cold west wind, attended by a heavy fog, making the atmosphere raw and cold.

The winter of 1888 and 1889 was an extremely pleasant one, rather dry, which was greatly to my advantage, and the summer and the greater portion of the fall were, of course, dry and suited to my condition, under which influences I made great headway.

But, as the rainy season came on, the old trouble again made its appearance, and as the last winter was a very wet one, my troubles have gradually reasserted themselves, and while I am infinitely better than in Michigan, and considerably better than in San Diego, I still take colds, sneeze, cough, expectorate, and play that disagreeable tune of "wheeze" once in a while. There is a low mountain range between here and the ocean, about six miles from my place, which somewhat breaks the force of the wind from the ocean. I am much better off on the land side of this range than on the ocean side.

This experience has been confirmed by the experience of others. Several cases of asthma of the spasmodic variety, that could not live at or near San Diego, were relieved as by magic in this valley.

There is something inimical in the atmosphere on the Pacific coast to sensitive respiratory mucous membrane. This is not alone confined to the human race. Other animals suffer from its effect. This is especially true all along the coast range with chickens. Many a poultry enthusiast has found it out to his sorrow. About three years ago a gentleman imported about three thousand birds from Iowa to El Cahon, twelve miles from the coast, and they nearly all died within a year. Chicks, especially before they are nine or ten months old, are liable to disease, and, strange as it may seem, this is worse in spring and summer than in winter. The birds take cold, the first symptom being a slight nasal catarrh; the discharge glues up the anterior nares; the discharges are retained; septic conditions take place in the mucous and muco-pus; the head and eyes swell up; systemic infection takes place, and if not cured by "Dr. Hatchet," the bird dies. In others the catarrh extends into the bronchi and vesicular structure, attended by asthmatic symptoms. On auscultation I have been able to clearly obtain some fine sibilant and subcrepitant râles. I have often stood outside of the coop at night and heard such birds "wheeze."

What is it that is so inimical to the respiratory organs on the Pacific coast?

A glance at San Francisco's mortality (from Health Report, 1890), from January to April, inclusive, where phthisis heads the list, pneumonia comes second, and bronchitis fourth in the list of causes assigned, is more than a hint.

While this will, no doubt, be reduced as we go south, I believe the same relative conditions will be found and the same causes at work.

Four conditions found on the coast may deserve the most attention in the probable causation:

1. The mildness of the climate.
2. The atmosphere, with its temperature and moisture, or humidity.
3. A depreciation of the systemic tonus and heat-centres.
4. Too great a variation in the diurnal temperature.

The nearer the ocean the milder and more even the daily temperature, and this is true the year round. Consequently the heat-centres of the organism are called to perform their function to a very little extent, consequently cold isn't tolerated, and people, horses, chickens, and other animals will shake and shiver here as much with a temperature of 35° or 40° F. as in Michigan at 10° or 15° above zero. I have driven in the country here wearing as heavy clothes—the same ulster, gloves, and buffalo-robe—that I had in Michigan winters, and did not feel any too warm.

During the warm weather near the coast, the air being heavily charged with humidity, there is very little evaporation of the body moisture, consequently the body feels clammy, and your underwear "sticks" to you, and this is one of the causes of frequent "colds."

The ocean atmosphere is most of the year considerably cooler than the terrestrial temperature, and, taken in conjunction with the force with which it comes, it soon chills you when warmed up, unless you put on extra "wraps." This custom is observed by the old settlers with the greatest care. He who fails to do this will not fail to contract "a cold."

While I believe that a weakened constitution can live longer and more comfortably here, I have every reason to believe that this climate will not produce as strong and vigorous people as New York or Michigan; in fact, any of the Eastern States. People do not possess the vital resistance against the inroads of diseases as in more rigorous climates.

Much has been written of the small variation of the annual temperature, but not so much of the diurnal variation, which, I think, is of considerable importance to invalids. This may vary from 10° or 12° to 30° or more, depending on the time of year and location, the extent of variation increasing from the coast inland from the increase of terrestrial radiation during night. There is a wide variation in this particular within the limits of San Diego County.

Unless this is guarded against by artificial heat and extra "wraps," it cannot help but have a prejudicial influence on invalids.

Referring again to the wind, I forgot one important particular,—viz., its celerity. This is so great in many places, where the wind has full sweep, that many cannot live at such places. I have seen quite a number who were compelled to leave such places, being near the ocean, with nothing to break the force of the wind. In such places the wind is cold, "raw," and disagreeable,—too severe for most delicate constitutions. Even some

persons who have no pulmonary troubles are compelled to leave on account of other troubles that arise.

Another disagreeable factor I must mention before coming to a conclusion,—the fogs. These occur most everywhere until we reach a high altitude and get farther into the interior. But go anywhere, and ask the inhabitants if they have much fog, and they will stare at you in surprise, and tell you, "*Very seldom indeed.*" The same report was given in this valley; but, I am sorry to say, the people had forgotten, to say the least. Having selected rather an elevated spot for my "ranch home," to where the fog does not always rise, I often look down in the valley, seeing nothing but the tops of the tall sycamores and two-story residences, which look as though they were floating in a lake. While I have not kept track of the nights and mornings we have fog, I think I shall not be out of the way to put it down as one-third. While these fogs do not detract anything from the general sanitary advantages, and give much relief during the summer both to vegetation and the human inhabitants, they always "stuff me up," producing cough and the musical râles.

I have extended my article beyond my intentions, and must come to a close. There is much that is wholesome and beautiful about the climate of Southern California, and many persons are restored to health, but it is not a universal panacea. That the coast range is not fit for the majority of pulmonary troubles, but especially those with sensitive mucous tracts, I am entirely satisfied, and while there can be no doubt that some have recovered their health entirely right on the coast, the majority do badly, and have to leave for the interior or other regions. Many I have seen that gained for a short time, but it did not "hold stitch." As I stated in the beginning of this article, I believe there is the finest and most varied climate in this county of any place in the world and in so small a space of territory.

Did we have the proper railroad facilities, an invalid could be transferred from five thousand to six thousand feet altitude in less than an hour, from snow-capped mountains to a warm, sunny, and delightful region, full of flowers, green grass, and trees in the middle of the winter; transferred within two hours from the most humid to the driest atmosphere, etc.

But we must have more data of what class of patients will receive the most benefit, for we are too far from the centre of population and invalids to do much guessing. The trip is too far and too expensive and tedious.

ESCONDIDO, CAL., September 15, 1890.

ADMINISTRATION OF THE DIGESTIVE FERMENTS.

BY JOHN AULDE, M.D.,* PHILADELPHIA, PA.

INTRODUCTORY.—Recent years have witnessed marked changes and improvements in the methods of preparing, and in demonstrating the chemical and physiological laws governing the administration of, the digestive ferments; but, notwithstanding the liberal distribution of the literature upon the subject, there are still too many physicians who are unwilling to be guided by the directions of experimental physiologists. The object of the present paper is, therefore, to take a comprehensive view of the principles which should guide the prescriber, studying the complications which occur in the course of diseased conditions where pepsin is merely palliative or absolutely contraindicated. In many anomalous conditions, in which indigestion is or appears to be the principal factor, the superior quality of the pepsin now offered to the medical profession is such that the temptation is too strong to resist giving it a trial. If the results be temporarily satisfactory, the digestive ferments receive a share of credit; but when this is not the case, they are roundly abused by the prescriber, with the result that these products are finally stricken from his list of medicaments, when the fault is entirely his own.

By way of explanation, it may be suggested that, while laboratory tests of both pepsin and pancreatin seem to be exact, and as definite as science demands, they cannot wholly supplant the results of clinical observations. It must be admitted at the outset that scientific truths do not always represent clinical facts, but they not infrequently form the groundwork upon which clinical indications are based, hence the physician must be prepared to be influenced in his administration of these products by the complications which are presented by the gastro-intestinal tract as contrasted with the precision which can be adopted when making investigations by means of the test-tube. Some of these dif-

* Member of the American Medical Association; of the Medical Society of the State of Pennsylvania, etc.

ficulties may be enumerated under the following heads:

1. *The condition of the alimentary tract* may be such that pepsin alone will prove inefficient. Thus, while pepsin is the normal ferment of the human stomach, it appears to favor acetic or lactic acid fermentation, processes which are promptly arrested by the presence of free hydrochloric acid; and to show how delicate a matter this is to determine, it should be noticed that, although the contents of the stomach give the acid reaction, it furnishes no positive evidence that the viscus contains free hydrochloric acid, as it may be combined with albumoses, peptones, etc. Mention should be made here of the great stress which was laid upon the absence of free hydrochloric acid as a diagnostic of cancer of the stomach. It will be remembered that at first this was stated to be an absolute indication of gastric cancer; but later investigations showed that the acid was also absent during the progress of various diseases; and, finally, it was shown that hydrochloric acid introduced into the stomach of a patient suffering from gastric cancer quickly disappeared and could not be recovered by the usual tests. The presence of free hydrochloric acid in the stomach is an important factor in preventing fermentation, acetic and lactic, and as a complement to the peptic ferment, but it possesses little value when present in the form of *loose* combination with peptones, etc. Various theories have been advanced regarding its origin, but that now most generally accepted is that hydrochloric acid originates from the action of sodium chloride and lactic acid, formed from carbohydrates, and thus we see that a wise provision of nature prevents lactic acid fermentation. This theory is apparently confirmed by the experiments of Girard, who found that the injection of a solution of sodium chloride into the rectum not only increased the secretion of gastric juice, but the aggregate amount of hydrochloric acid in the stomach and the pepsin were likewise increased. The employment of other chlorides, however, failed to produce this effect, items to be taken into consideration when prescribing a special diet for the sick. These observations, it will be observed, lend color to the belief that too much salt taken with food has a deleterious effect, and places us in a position to appreciate the scientific basis upon which this popular notion rests. No attempt has been made as yet to take advantage of this practical fact, except perhaps in the empirical use of lactic acid in the treatment of intestinal affections of children during the summer season. The probabilities are, however, that better results would follow the use of hydrochloric acid rather than to depend upon the theoretical transformation of this substance (lactic acid).

Attention should be called to the fact that many persons partake too largely of carbohydrates, and, as a result, too much lactic acid is produced in the stomach, the normal function, the production of hydrochloric acid, is arrested; and consequently a large portion of our population are more or less constant sufferers from acidity of the stomach and fermentation of food, which seriously hinders intestinal digestion. Not infrequently it is just this intestinal dyspepsia which the physician endeavors to correct by the administration of pancreatin. The folly of the method becomes apparent when we consider how promptly relief will follow the withdrawal of starchy foods and sweets, the restriction of the patient to a meat diet, together with the judicious employment of pepsin with a small quantity of hydrochloric acid for a limited period. Of course, I am guided by theory to these conclusions, my information having been derived from the experiments of the physiologists; but, concerning the actual results obtained by the plan advocated, I speak from experience, which must be accepted as the final test. The observations of Salisbury and Cutter, although not yet confirmed by the published experience of American practitioners, must evidently be making an impression upon their practice. Pausnitz, a German author, recently made some observations upon feeding a man for several days on beans, to which was added a little fat, meal, salt, vinegar, and beer, and he found the results unfavorable, facts which were proven by Salisbury more than twenty years ago. In this connection should also be mentioned that care is necessary to avoid acetic fermentation, the presence of butyric, oxalic, and other acids, which materially hinder or arrest the action of digestive ferments.

Inasmuch as most of our patients are suffering from this acid condition of the secretions due to an improper diet, no doubt good results would attend the exclusion of all starchy foods and sweets temporarily, using large doses of sodium bicarbonate with a view to modify the condition of the secretions as quickly as possible. It is not enough, however, to order 10 grains after meals; such dallying but prolongs the misery of the pa-

tient. Nor should this substance be taken in considerable doses shortly after meals, owing to the increased work thrown upon the stomach. Generally, it will be found most useful; and the rule applies to alkalies as a whole, if the medicament be given about two hours after food is taken into the stomach, although there may occasionally be instances where more can be effected through the administration of the alkali about an hour before taking food. For the purpose of effecting any marked change, as much as 30 to 60 grains of the sodium bicarbonate, well diluted, should be taken at the times indicated. The use of hot water is also recommended, but it must be ordered with due regard to the wants of the patient and condition of the digestion.

2. *The influence of microbes* was at one time regarded as having an important action in promoting digestion, but the investigations of Harris and Tooth demonstrated that micro-organisms were unnecessary for gastric digestion. They have shown that microbes produce not true peptones, but albumoses, and they found also that trypsin also could convert proteids into peptones without the assistance of micro-organisms, so that the functions of the micro-organisms have been unduly magnified, although Abelous discovered no less than sixteen different species from the products of the washings of his own stomach. The presence of micro-organisms is not doubted, but we must bear in mind that many of these bodies are mutually antagonistic; the poisons developed by this destructive action we can only estimate, neither are we in a position to say to what extent they are responsible for symptoms of disease. Through the medium of the circulation a considerable portion of this refuse matter must be carried to the liver, where it is destroyed absolutely, but doubtless the peptic ferment, along with free hydrochloric acid, exercises an important function in the destruction of this form of poison at various stages of development.

Among many ingenious theories that have been advanced concerning the digestive ferments as factors in the production of disease should be mentioned Loewenthal's notion that the reproduction of the cholera bacillus of Koch was due to the presence of pancreatin in the intestine, and, by means of a combination of hashed pork, bean-flour, common salt, peptone, and grape-sugar, to which was added some pancreas from a hog, he apparently proved the truth of his theory. To meet this diseased condition (cholera), it was only necessary that the proper antiseptic be deposited in the habitat of the microbe,—the small intestine. The remedy was discovered in salol, but we cannot learn that it has been the means of directly lessening the ravages of Asiatic cholera, although the bacilli in the test-tube were rendered *hors de combat*. Theories of this nature must always be accepted with certain limitations, because of the complications existing in the human economy, and the results attending our efforts in overcoming disease are really surprising when we consider the array of micro-organisms, ptomaïnes, leucomaïnes, and so-called extractives with which we have to contend.

3. *Among the extraneous causes* which prevent us from obtaining expected benefits from the employment of digestive ferments may be mentioned the condition of the liver and an impoverished condition of the blood, such as we find in anæmia, chlorosis, etc. It is to the liver that we must look for assistance when dealing with a depressed state of the economy, such as may be presumed to exist when there is a demand for digestive ferments. This organ performs an important and valuable function in the elimination of poisonous material from the blood; and, in addition to its function as exemplified in the formation of bile, we should bear in mind that it acts upon peptones, and has a destructive influence upon the ptomaïnes and other poisons previously referred to. Very many alkaloidal substances are destroyed upon entering the liver besides the cadaveric alkaloids, and especially is this true of the alkaloids obtained from the Solanaceæ group.

When the functions of the liver have been deranged by the abuse of alcohol, or when they have been overpowered or suspended, as in the case of long-continued disease, like typhoid fever, the benefits to be derived from the exhibition of digestive ferments will be comparatively limited. True, the primary assimilation receives an impetus, but until the barrier presented by a diseased liver is removed, but little benefit can be expected to accrue to the secondary assimilation. The torments of indigestion may be temporarily relieved by means of artificially-prepared gastric juice, followed later by pancreatic preparations, but the body remains without its proper nourishment. A like condition obtains when a person is overfed, or when the food has been inappropriately selected, as in the case of starch and sweets previously noted, by which the functions of the intestinal tract become depressed.

Anæmia, chlorosis, and allied affections are often but the succeeding stages of the pathological changes just described, and, as a consequence, without proper attention to the liver, and an attempt to re-establish the integrity of the mucous membrane of the alimentary tract, the treatment of these affections by the exhibition of digestive ferments must be regarded as a temporary expedient, one which is not well calculated to shed lustre upon the reputation of the physician adopting the tactics. But, when these remedies are used in connection with appropriate treatment directed to the causation of the malady, the improvement will always be in proportion to the success with which the real cause is overcome, and accordingly the patient will be rewarded by the permanency of his convalescence.

4. *The mode of administration* also remains to be considered. If the statements of physicians and the observations of druggists are to be credited, there is reason to believe that great laxity exists concerning the combinations which are proper and suitable when exhibiting pepsin and pancreatin. Many physicians, while recognizing the immediate benefit to be derived from these products when introduced into the stomach, also take cognizance of the true conditions just pointed out, and endeavor by means of combinations to secure alleviation of the effect and removal of the cause at the same time and by the same agent. Theoretically this is a *desideratum*, but practically it is a failure, owing to the incompatibility which exists between these physiological remedies and other preparations of the materia medica. With a view to bring this subject more forcibly to the attention of the reader, the following formulæ have been prepared, showing some of the incompatible and unphysiological combinations that are not infrequently ordered by physicians who are anxious for the recovery of their patients. As little space has been taken up as possible in criticism, but it is believed sufficient has been said to stimulate investigation, which will eventuate in the investigator arriving at the same conclusions as the writer. Take the following:

℞ Pepsini puri, gr. xxx;
Sodii bicarbonas, ʒii;
Glycerini, fʒiv;
Tr. cinchonæ comp., q.s. ad fʒiii. M.
Sig.—Take one teaspoonful in water after meals.

Those who believe the foregoing combination to be an efficient remedy for indigestion, on account of its containing one and one-fourth grains of pure pepsin to each dose, will, we fear, be greatly disappointed, as Dr. Winslow has positively determined that a very small proportion of alkali added to a solution of pepsin permanently destroys its activity, and that it cannot be regenerated by the addition of an acid. But this is not the only objection to the combination in respect to the contained pepsin; the presence of tannin in the compound tincture of cinchona will destroy a considerable quantity, if not all, of the pepsin in this mixture. Again, it must be borne in mind that this preparation is alcoholic, and alcoholic solutions of twenty per cent. or over act very quickly, causing the deterioration of pepsin. And still, no doubt, physicians will insist that a mixture of this character has produced good results in their experience, a fact which is readily admitted; but, at the same time, it is not admitted that the good results have been achieved by the presence of pepsin, but to the other ingredients. A mixture of this nature will show that it possesses no digestive activity in the test-tube.

Take another formula, in which the two products are combined like the following:

℞ Tr. capsici, gtt. xvi;
Vini pepsini,
Liq. pancreatin, aa q.s. ad fʒii. M.
Sig.—Take one teaspoonful in water three times daily.

The above formula is defective in several respects,—first, because it contains both preparations in a liquid form, which, as is well known, permits immediate and prolonged action, when the most powerful ferment will destroy the less active unless the quantity and reactions interfere. In this particular case the evidence is sufficient to determine in favor of the supremacy of the pancreatin, because a wine of pepsin often has practically no pepsin in it; this we may call the second and third defects. In the preparation of a wine of pepsin, the wine should first be detannated in order not to affect the peptic ferment. An alcoholic preparation of pepsin that is permanent is not impossible, but to retain its activity the ratio must be less than twenty per cent. of alcohol. Dr. Bardet has undertaken a number of experiments to determine the solubility of pepsin in alcohol and the influence upon its physiological action. It was found that ninety-five per cent. alcohol precipitated the greater part, and that in a fifty per cent. solution the pepsin was about as soluble as in water. With a good

quality of pepsin it was found that the pepsin was unimpaired in a twenty per cent. solution, but when the strength of the alcohol is increased from twenty-five to seventy per cent., the value of the pepsin proportionally decreases. Lastly, this prescription is too indefinite, no time being given for its digestion.

If the question as to the advisability of giving both pepsin and pancreatin in the liquid form at the same time presented, I could not say that such a course would be impracticable or unphysiological, as I am disposed to believe that both may produce salutary effects when introduced into the stomach at once. The reservation is made that they cannot be made up together and allowed to remain indefinitely in contact, but should be mixed at the time of taking. This exception would not hold in the case of using the two products in the form of a dry powder, as until moisture is present fermentation is postponed. When the two are combined, the most appropriate time for exhibition is during or just after taking food,—points to be defined in connection with the discussion of the respective ferments, the method and time of their exhibition. (See SUMMARY.)

The annexed formula is presented because it is intended to act as an antiseptic, and contains mercuric bichloride, one-thirty-second of a grain to each dose, along with one and one-half grains of powdered pepsin:

℞ Pulv. pepsini, gr. xxiv;
Acidi hydrochlorici dil., fʒii;
Hydrarg. bichloridi, gr. ss;
Alcoholis,
Tr. ferri chloridi, āā q.s. ad fʒiii. M.
Sig.—Take one teaspoonful in water after meals.

The careful observer will readily perceive that this formula is what might be termed a "shot-gun prescription." It is actually a double-header,—two prescriptions in one. But while it may be a useful combination and stimulate digestion, owing to the presence of the antiseptic,—mercuric chloride,—and act as a hæmatinic, owing to the presence of iron, it is in no sense an aid to digestion because of the contained pepsin. The peptic ferment will be destroyed long before it reaches the stomach by the mercury, by the alcohol, or by the tincture of the chloride of iron. The better plan would be to combine the pepsin with the acid, and give it with a little water and glycerin about half an hour after meals; the other three ingredients might be combined with advantage, and given an hour later than the pepsin-acid mixture.

The ingredients of the following preparation are but too familiar to the critical eye of the scientific physician, but the laity still partake with a relish (?) and seem to enjoy the delusion. It may be accepted as a modified elixir and purely a humbug, in respect to its digestive properties.

℞ Pepsini puri, gr. xxiv;
Bismuthi subcarb.,
Pulv. carb. ligni, āā gr. xxxii;
Elix. aurantii, fʒii. M.
Sig.—Take one teaspoonful in water after meals. (Shake.)

The contraindications for the employment of alcohol in the percentage contained in the simple elixir of orange need not be again described, as it will be seen at a glance that the peptic ferment is promptly destroyed. Whatever good results from the use of this combination will be mainly due to the bismuth and the charcoal it contains. If the elixir was eliminated, and the pepsin, bismuth, and charcoal all given in the form of a dry powder, a useful combination would be afforded. Neither the bismuth nor the charcoal retard the activity of the pepsin, and the latter, by absorbing offensive gases, might, in fact, favor the activity. To the student who keeps up with the activities of the progressive age these criticisms will have but little significance, but to those who have been standing still for the past few years the recapitulation of the foregoing formulæ will prove a revelation; and it is sincerely to be hoped that at least a limited number may find it advantageous to combine their digestive ferments in accordance with the views here advanced.

5. *Inferior preparations* must be regarded as a factor which seriously interferes with the successful employment of digestive ferments, but in this case it will be sufficient to refer the reader to the elaborate study of Professor Chittenden, of Yale, who, after giving this subject careful attention in the way of comparative laboratory tests, announced his conclusions as follows: "As a final result, then, we may consider the true proteolytic power of the above ferments, compared with the one of highest digestive power, to be as follows:

	"Relative proteolytic action.
"1. Parke, Davis & Co.'s pepsinum purum in lamellis	100
2. Fairchild's pepsin in scale	52
3. Scheffer's dry pepsin, concentrated	48
4. Jensen's crystal pepsin	35
5. Ford's pepsin in scales	32
6. North's pure pepsin	16
7. Boudault's pepsin	14
8. Royal Chemical Company's pure pepsin	9

"In considering these results," Professor Chittenden also adds, "it is to be borne in mind that the same brand of pepsin is liable to slight variations in its digestive power, doubtless dependent in part upon the condition of the membranes from which it is prepared." This leads to the suggestion that it would be advisable to have these products examined from time to time, with a view to determine their activity,—a simple process, which can readily be carried out by any practitioner of ordinary ability. Most physicians are acquainted with the requirements for a good pepsin, hence it will be unnecessary to enter upon a discussion of this question at the present time; but, from what has been said, it will be evident that those who condemn the use of digestive ferments, after a perusal of the foregoing remarks, will have no excuse for so doing on the assumption that they are inactive or lacking in proteolytic or amyolytic properties.

Summary.—In concluding this somewhat imperfect sketch of the methods to be followed in the employment of the digestive ferments, as viewed from the stand-point of the clinician, it may be well to recapitulate, in the form of a summary, some of the more practical points which have been brought forward.

When describing the conditions of the alimentary tract which interfere with the processes of artificial digestion, I have referred to the tendency towards acetic and lactic acid fermentations, together with the influence which hydrochloric acid has upon these pathological or functional derangements; and have noted also the supposed origin of this acid along with the metamorphosis which is supposed to follow the free use of common salt as an article of diet. The disadvantages of a too free use of carbohydrates as a dietary have also been noted, and it is desired here to further emphasize the fact that these substances especially hinder intestinal digestion. Knowing that a large portion of our population subsist chiefly from day to day upon a diet principally composed of carbohydrates, we can appreciate the relief furnished by purgatives in the case of minor ailments, by which means the intestinal tract is temporarily relieved of its burden. The benefits to be derived from the free use of alkalies and the judicious employment of hot water have likewise been mentioned, when, it is but reasonable to assume, the digestive ferments will afford the most pronounced evidences of their utility.

With a view to supply further light upon this occult subject, the theory, now exploded, that microbes co-operate with the normal ferments of the stomach in promoting digestion has also received attention.

The extraneous causes which prevent us from obtaining the desired effects, as regards the condition of the liver and the impoverishment of the blood from various causes, have also been pointed out, in order that those who assume that these remedies ought to accomplish miracles will be compelled hereafter to estimate the demand by considering the subject in its different bearings.

The faulty methods of administration have, it is believed, received due consideration; but, as a complement to that which precedes on this topic, a few words may be added relating to the rules for prescribing both pepsin and pancreatin. Pepsin acts only in acid medium, and should not be given with an alkali, because the ferment is thus destroyed, and cannot be regenerated by the addition of an acid. If doubts exist, therefore, as to the presence of free hydrochloric acid in the stomach, that substance should be combined with the pepsin. The peptic ferment having been once properly started, it will continue to act indefinitely, providing the peptones are removed and the contents of the stomach kept acid, and it may be advisable to add small quantities of the acid from time to time in the hope that gastric digestion will thus be favored.

The most appropriate time for the administration of pepsin, when given alone, is immediately after taking food; when combined with an acid, the administration may be advantageously delayed for half or three-quarters of an hour, in order to afford a favorable period for the salivary secretion to act upon the starchy portion of the food and stimulate the secretion of the normal gastric juice.

Pancreatin should be given during the early portion of the meal, with or without a simple bitter free from tannin, or it should be administered about two or two and a half hours after, when the contents of the stomach are supposed to be neutral in reaction. Containing an active proteolytic ferment,—trypsin,—this product acts readily upon proteids and upon amylaceous materials, and will be found to produce remarkably favorable effects, especially when dealing with indigestions due to derangements of the intestinal tract. Both pepsin and pancreatin may safely be given in the form of powder combined; but, in the liquid form, when allowed

to remain in contact, their activities are decidedly lessened. Occasionally pancreatin may be combined with alkalies, but as it is an extremely delicate substance, more certainty will attend its use when given alone, preceded or followed at an interval of half an hour by the proper alkali.

The necessity for care in the selection of these products is so well demonstrated by the results of Professor Chittenden's investigations that I cannot do better than refer the reader to his conclusions as recorded on another page.

1910 ARCH STREET.

WATER AS A THERAPEUTIC AGENT.

BY W. E. SCOTT, M.D.,* ONTARIO, CAL.

TROUBLET has truthfully written, "To select well among old things is almost equivalent to inventing new ones."

There is a tendency among physicians, which is encouraged by those who are financially benefited by the change, to transfer their affections from the older friends of the practitioner to pretty young aspirants for esteem in the form of new therapeutic agents. So, frequently have these *débutants* come into popularity like shooting stars, and passed into obscurity with the suddenness of a discharged Roman candle.

I would not be considered as opposed to progress and improvement in any form or place. I realize the advantages which have been gained by many happy changes in the methods of the past. I believe it to be every physician's duty to give his patients the advantage of any and all the remedial agencies which have been demonstrated; to be, in other words, an eclectic in the true sense of the word.

Queer changes have taken place in the practice of medicine, within the limits of my own observation, in the use and doses of many common remedies. These changes have been due to the light of experience and the partial overthrow of what might be termed the ruttism of the past.

I have seen the heroic doses of our forefathers in medicine, among those of the regular school, reduced in many cases to a fraction of their former quantity. I have observed the delusion of high potencies, which was the chief attraction of homœopathy, to so fade into comparative obscurity, as indicated by the practice of their representatives in their ordinary prescriptions, that serious fears have been entertained that they were rapidly gravitating to the opposite extreme.

The plausible recommendations which are frequently given to new therapeutic agents by medical literature, by circulars, and by the encomiums of the public press, have a strong tendency to divert the attention of the average practitioner from other methods of treatment, which have more claim on our profession than usage by its members would indicate.

Comparatively too much time is spent in prospecting for the philosopher's stone, which is to transform disease into health by means of drugs alone, and too little to the opening up of discovered claims, which only need development to unfold a world of wealth.

I refer especially to the use of water as a therapeutic agent.

Even compared with the most brilliant discoveries of this enlightened age, I consider water as the most important and valuable remedial agent in use.

If this Society think, as chairman of the Committee on Materia Medica and Therapeutics, I would have shown better judgment in bringing to your notice some subject with which you are less familiar, I will remind you that a president of the American Medical Association read a paper before a national gathering of medical men on "How to Prepare a Poultice, and its Uses."

The subject chosen so far transcends the one referred to that I hope to be pardoned for introducing a topic with which so many are familiar and concerning which so few are informed.

From earliest ancient historians we learn that water has not only been used for drink and purposes of cleanliness, but for the distinct purpose of healing disease. The writings of Job, Jacob, Homer, and other ancients all praise its healing virtues. Primitive tribes in many lands, centuries and ages before the introduction of modern pharmacy, used water in different forms in combating disease, with which the race has probably been afflicted soon after the creation. The Hindoos plunged their sick into the sacred waters of the Ganges, the laws of Moses demanded baths of purification, and those of Mohammed prescribed similar rules. Thus, it will be seen, that in early days its use was even associated with religious rites. When we realize that in

* Chairman of Committee on Materia Medica and Therapeutics; First Vice-President of the Southern California Medical Society.

early ages knowledge was largely confined to the priests and clergy, this fact does not detract from the importance of the precedent. In the Middle Ages the Greeks, Egyptians, Gauls, and Romans each had luxurious public and private baths. Those of Caracalla are said to have had sixteen hundred seats, capable of seating three thousand people, while those of Diocletian were so extensive that forty thousand soldiers were employed in their construction.

Alexandria, in Egypt, at the time of its destruction, had four thousand baths, similar to those in use by the Romans, and had not its magnificent library been cremated our literature on this subject would undoubtedly have been enriched by many volumes representing the knowledge and uses of water during those ages.

From the days of Hippocrates, who advocated the use of water as a remedial agent in pneumonia, inflamed joints, rheumatism, spasms, fractures, and dislocations, to the days of Priessnitz, the German peasant, who, by his discriminating and intelligent use of water in the treatment of disease, commanded the attention of the civilized world, and gave to the subject an impetus which led to extensive investigation by members of the medical profession, progressive physicians in all ages have utilized its healing virtues to a varying extent. Galen, Celsus, Hoffman, Guianani, Fleury, Haller, Currie, and other leading medical men in the age in which they lived have left memorials in its praise.

At the present day, on the continent of Europe and in America, there is not a city, of any considerable size, which has not one or more establishments, where, under the management of physicians, disease in various forms is treated by hygienic measures, with water as the sole remedial agent.

Hundreds of springs are celebrated throughout our land as possessing peculiar curative properties for a large number of diseases. I do not believe all the good results obtained at these places are solely due to the use of their water, neither do I believe that many possess peculiar virtues which may not be obtained at home under the management of one who is sufficiently conversant with the value of this agent and understands its mode of application.

The relaxation from business or home cares, the changes of climate, diet, and scenery, and the free use of water, in ways which had been neglected even as a cleansing y at home, have materially contributed to the results produced. There is no special reason why the average physician cannot in his daily practice derive the beneficial results of these water-cures. He has the advantage to be gained from the use of all those medicinal agents which confirmed hydropathists from principle eschew, because they are so bigoted as not to recognize any virtue in medicine: he is placed at a disadvantage in not possessing the facilities of treatment used by such institutions, his patients are not directly under his immediate supervision, and do not derive the benefits due to a journey with its changes of scenery. Physiologists teach that the great bulk—even of the more solid constituents—of the human body is composed of water.

It is practically the fluid through which nourishment is conveyed to all parts of the system. It is the medium through which effete matters largely are carried to the several organs of excretion for elimination.

In its pure state it is the universal solvent for the elementary constituents of the body.

If we realize these statements to be true, we cannot help believing that this substance is the most important one in the animal economy. In one form of its application for the cure of disease there is an experiment which has probably been illustrated to some of you in studying the subject of endosmosis and exosmosis.

A glass tube, in which is placed a strong solution of salt or other soluble mineral, is half filled. A gold-beater's skin then covers this solution, and the tube is filled with pure water. After a certain length of time the two fluids will be found to be identical. The mineral solution will penetrate this animal skin in the same proportion as the pure water does, until a like solution is found on either side.

This same principle can be applied to the human skin, and thus abstract the effete matters and diseased products with which it is frequently obstructing the millions of pores of this organ of excretion.

But a small percentage of the people are conversant with and apply the simple rules of ordinary bathing, and but few medical men give this subject a fraction of the attention which its merit would command were the results more widely known and its *modus operandi* better understood.

In the different forms in which its virtues can be utilized it has various actions. In one form it is one of the most powerful astringents, and again it is a powerful relaxing

agent. It can be made at will, as by a magician's wand, to act as an emetic, laxative, diaphoretic, diuretic, alterative, tonic, refrigerant, antiphlogistic, stimulant, sedative, and antithermic. No drug, or combination of them, is so extensive in its range of application, or so certain in the desired effect. It can be administered in such mild and pleasant forms as to excite the jealousy of the high potency disciples of Hahnemann, or in forms so drastic as to command the admiration of the most radical of the followers of Hippocrates, with all of the more desirable intermediate gradations.

There are four reasons why the administration of this remedy is not resorted to more in accordance with its virtues:

First.—It involves too much trouble on the part of the patient, the nurse, and ofttimes the physician. It is so much easier to write a prescription or to order an ordinary potion.

Second.—There are but few physicians among those of the regular school, the eclectics, or homœopaths who have had the opportunity or inclination to give the subject that degree of attention which is required to obtain the results possible under other circumstances.

Third.—So much has been expected from the use of the new antipyretics—antipyrin, antifebrin, phenacetin, and similar preparations which are easy of administration—that it has been hoped that some safe and effective drug had been discovered which would replace the use of water in at least one of its several functions. It must not be forgotten, however, that some of the most experienced observers have boldly uttered their opinions that while these new agencies were a success in reducing high temperature, they did not in any other way modify the gravity of the disease with which the fever was associated.

Fourth.—It has been demonstrated strikingly in the principle of vaccination, and on numerous other occasions, that physicians are not prone to change fixed views on medical topics after reaching the age of forty. Younger men are apt to be largely influenced by their elders, and this is a chronic source of obstruction to any change which tends so strongly towards a revolution in the entire practice of medicine. Lastly, there is a prejudice against a mode of treatment which has been adopted as the sole principle of a distinct school of physicians.

The principles which are involved in a conservative application of the ideas embodied in this paper are gradually assuming a proper place among progressive physicians to which they are by their merits entitled.

Soon after becoming interested in this subject, in 1882, I commenced an investigation into the habits of cleanliness among a certain class of my patients, and was surprised to learn the extent to which some can go in violating the injunction that cleanliness is akin to godliness. One case in particular is recalled to mind. A man who lived in the northern border of the adjoining State of Arkansas consulted me in regard to his ailments. After a careful examination into the particular trouble for which he sought advice, I made bold to ask him how long it had been since he had a bath. He looked at me attentively for a moment, then said, "A bath, doc.! Do you mean wet all over?" I replied in the affirmative. He scratched his matted, silvery locks for a moment, then said, "Well, doc., if that is what you are meaning, I have not been wet all over since sixty-three." Twenty years is a long time between baths, yet I suspect the cause of his getting wet all over at that time was due to some scrape during the war, in which it was purely involuntary.

The diseases to which water is applicable as a remedial agent in one or more forms embraces almost the entire nomenclature of practice. Dujardin-Beaumetz, one of the most eminent of modern medical writers and practitioners, who, while not an enthusiast, is an ardent admirer of its healing virtues, considers organic heart-disease as the one affection where its active use as ordinarily practised is contraindicated. In fevers of all kinds, diabetes and other kidney-diseases, congestions and inflammations, small-pox, scarlet fever and other acute eruptive diseases, indigestion, constipation, nervous diseases, especially neurasthenia, hysteria, and melancholia, skin-diseases generally, gout, obesity, diseases peculiar to women, are some of the diseases where its effects are gratifying. In the practice of midwifery it is one of the greatest boons such women ever experienced. I say this with a due knowledge of the great benefits to be derived from anæsthetics. Properly managed, it removes from confinement its terrors to a great extent, and is more than a substitute for the most improved form of instruments in a very large per cent. of the cases in which they are commonly used.

Jacquez, of Lure, in his statistical researches on treatment of typhoid fever, pub-

lished in the French *Archives of Medicine* in 1847, reported that for fifteen years he had followed a treatment which consisted exclusively of the use of water externally and internally, having had under his care during this period three hundred and fifteen cases, with a loss of only nineteen lives, or a fraction over six per cent.

Sokolowski, a Russian physician, in a paper published in a French medical journal,—the *Bulletin of Therapeutics*,—in 1877, gave some statistics showing the results from a water treatment in cases of consumption, which will be interesting in a country which is a Mecca for so many of these cases. Of one hundred and six cases, sixty were in the first stage, twenty-nine were marked, and seventeen were advanced. After six months of treatment, thirty-nine were cured, thirty-four showed marked improvement, nineteen were ameliorated, seven showed no results, three were made worse, and four died.

I will relate the effects of one form of this treatment in a single case which occurred in my own experience, which may prove a beacon-light to some one who has occasion to test its merits. It was one of Bright's disease, with uræmic poisoning, in a young man about 30 years of age. Three leading physicians, in a city of twenty thousand people, who had been in attendance, had passed their opinions that he could not live longer than a few days at the most. I saw the case at this time, when it was practically abandoned, and prescribed a series of packs and baths. This was done on the principle that one organ of excretion can be made to assume a portion of the burdens which are ordinarily performed by another. In about one week the patient was out of danger, and in three he was able to travel about six hundred miles to his old home in another State.

The variety of methods in which this remedy can be used, with their various modifications, are almost as numerous as the list of diseases to which they are applicable. The more common forms for external use are douches, ordinary and partial, medicated- and sponge-baths, wet sheet-packs, wet cloths, rubber tubes for irrigating, mud-, vapor-, Turkish, and Russian baths.

The amount of excretion which can be removed from the pores of the skin of an average *cleanly* person by some of these methods is astonishing to one who has never witnessed the operation. When used on a person who is afflicted with some diseases, or who is uncleanly in his habits, the result is simply disgusting.

The choice of the method to be used, and the temperature of the water in its application as a curative agent, will depend on the nature and gravity of the disease, the material available, and the effect desired. Injury can as easily be done in the use of this remedy injudiciously, as with other valuable therapeutic agencies.

Delmas, in his "Manual of Hydrotherapeutics," published in Paris in 1883, has prepared a thermometric table in which the gradations of temperature are very minutely arranged:

Excessively cold	30.0° to 42.8° F.
Very cold	44.6° to 59.0° F.
Cold	51.8° to 60.0° F.
Moderately cold	60.8° to 68.0° F.
Slightly cool	69.8° to 77.0° F.
Tepid	78.8° to 86.0° F.
Warm	87.8° to 95.0° F.
Very warm	96.8° to 104.0° F.
Excessively warm	105.8° to 158.0° F.

THE ETIOLOGY OF CHOLERA INFANTUM, AND ITS TREATMENT BY ZINC AND SODIUM SULPHO-CARBOLATE.

By Leonard G. Broughton, M.D., Reidsville, N. C.*

IN beginning this paper it is scarcely necessary for me to state that from cholera infantum a greater mortality results than from any other class of diseases to which children are susceptible, for the awful experience of too many mothers attests the truthfulness of such a statement. The cause for this fearful and alarming fact, however, is not generally known by the public. Is it not a fact that in too many, yea, in the vast majority of instances, death results from a want of interest and knowledge on the part of the attending physician? Is it a fact, too, that in matters of disease and health, the great, generous public impose too much confidence in the physician for his merit? If this deficient knowledge on the part of our profession was the result of imperfect teaching or imperfect science, we might claim an excuse, but, in the main, such is not the case.

What, then, can be the cause? A few words will state it,—absolute indolence. This is the key that unlocks the cause of so much trouble, not only on this line but many others. If, then, as a result of indolence, we allow our little patients to sicken

* Member of the North Carolina Medical Society, and chairman of its Section on Prac ice.

and die, what feelings of remorse will we have when we reflect over our past experience?

Too many of our most sensible practitioners belong to the class of "non-investigators." They may, too, be denominated "kickers." They kick when the new theories are brought out by men who do think. They denounce germs and bacteria, and modern asepsis and antisepsis. Why? Simply because they do not wish to investigate them, and learn the principles deducted from them.

I once had a college professor who taught that HO was the formula for water, and SO_3 the formula for sulphuric acid. He was called one of the smartest men in North Carolina, and he was, but he had not investigated modern chemistry, and learned that grand system,—*valence*. If so, he would have known that the univalent H would not combine with the bivalent O, only in multiples; and also he would have known that all acids were salts of hydrogen; and hence sulphuric acid should have been H_2SO_4. I mention this to show that the one trouble with our bright men, so called, in all professions is the trouble of indolence and many times prejudice. But is it not more evident in this our grand profession than in any other? And now and then, when a young man tries to acquaint himself with modern discoveries, and, when once acquainted, becomes convinced and adopts these truths, he is called "*smart*," in a sarcastic manner. And hence, instead of an impetus being given to those who would investigate, the opposite is the case.'

But I was intending to write on cholera infantum, and I must ask pardon for my digression, for I feel that it is in this line that this thing of indolence is most manifest. How many physicians are acquainted with the recent discoveries concerning this disease? How many treat a case without ever examining the stools or taking the temperature? How many know that an odorous stool means an albuminous fermentation, and an odorless stool means a carbohydrate fermentation, and that each requires a different *régime*? Now, what I want to do is to point out some causes, not original, for this disease, and then deduct some principles regarding their treatment, and mention some remedies of most service to me in the management of them.

In the first place, I wish to state that *abnormal fermentation* of food-stuffs is the primal cause of this disease; and, second, I wish to say that that *régime* that will most successfully counteract that condition will quickest alleviate our patients.

Now, let us call in some of the modern investigators on this first proposition. Vaughan, who has had extensive experience, says, "In cholera infantum the germ is *pathogenic;* a definite chemical poison; the factor which is operative in these cases is to be found in the food; the changes which take place occur either before or after being taken, in either case the result of micro-organisms." Baruch: "It is due chiefly, though not solely, to the multiplication of micro-organisms, generated in the gastro-intestinal tract as a result of indigestion; conditions analogous to wounds, to which septic material has had access." Rachford holds "that the chief, if not the *only* cause, of this trouble, is abnormal intestinal indigestion and fermentation of food-stuffs." Baginsky argues: "Indigestion and decomposition is the cause of this trouble, as of all the diarrhœal disorders; the way in which abnormal fermentative changes take place in the normal bacterium aceticum (lactis aerogenes of Escherich) hinders the growth of pathogenic germs. If the normal fermentation exceeds a certain point, the bacterium aceticum is itself destroyed, and the excess of acetic acid interferes with the action of the pancreatic and biliary secretions, and acts itself as an irritant. If, then, the fermentative process goes on further, we have gases, methane, etc., formed, which lead to catarrhal changes, etc., in the mucous tract. These conditions open the way for numbers of bacteria, which find their way into the tract, and, as a consequence, an alkaline fermentation, etc." And so the witnesses testify as to fermentation being primarily the cause of this trouble. I might give more, but these suffice.

Some few years ago Dr. William F. Waugh, of Philadelphia, Pa., wrote on this line, giving a very clear explanation of its cause, and he was the first to open my eyes and put me to investigating. He took the ground that it was caused by indigestion and decomposition; and that the germ was *entirely* local, and was developed in the bowel; and that the intense cerebral symptoms we so much dread were only the results of the absorption of the products of germ action.

Now, let us bring our own experience to bear upon the subject. In the last few years I have taken much interest along this line, and in every case I have taken great pains to go back in my inquiries to a few days be-

fore the child was taken *so ill*, and in *every* case I have been able to find evidences of indigestion; and the severe seizure has only been the grand culmination of these pre-existing troubles.

And just here let me say that, as I take it, a child need not be passing great quantities of serous matter, of a rice-water character, to have cholera infantum. True, it may not be *genuine* cholera infantum, but shades of it or degrees of it.

Without saying more on the line of cause, let us come to our rational deductions. We stated that our second proposition was that that *régime* which would most successfully counteract these conditions would evidently be most successful in the treatment of this trouble.

Now, then, what is that *régime*, and how shall it be put into practice? First, by proper attention to diet; and, second, by properly-selected remedies. Before taking up diet, let us presume we are treating a milder case; not one of those severe seizures that result so quickly in collapse and death, but a case in which there are several fluid discharges daily, with fever, thirst, etc. Here is when we can do most good. Let us first examine stools as to color, consistency, and odor. We find them most frequently of a dark yellow, thin, and watery, sometimes odorous and sometimes odorless. If odorous, we know that we have a case of albuminous fermentation, and a carbohydrated food is indicated. What shall it be,—milk? No; for milk is albuminous and carbohydrate also. What, then? Thin starch-water is good, or wine-whey is better, the albuminous part of the milk being extracted by the wine, and the carbohydrate alone remaining, and this also serves as a stimulant as well as a food. A food of this kind is usually sufficient till the troubles can be overcome. If other food should become necessary, hard crackers soaked in warm, sweet water do well, etc. If, on the other hand, the discharges be *odorless*, we have to deal with carbohydrate fermentation, when an albuminous food must be given. Milk, in this case, will not do, for it contains carbohydrate. Neither can we use whey. So, then, milk will not do for any form. Egg albumen given now will act well here, given largely diluted with water; also the different vegetable broths, as they contain vegetable albumen. I might say more on this line, but this suffices to show my point. But, before proceeding to the consideration of drugs, let me say a word as to the important part played by heat in the production of these troubles, to say nothing of its influence over food fermentation, etc., and over the nerve-centres. It has the effect of lessening the quantity of oxygen in the blood, and hence the waste products are allowed to accumulate, and by their presence vitiate the system, and render it susceptible of germs and poisonous ptomaïnes; and, hence, to overcome this, is a matter entitled to consideration. Keep the child cool; use freely the cold sponge-bath.

Now we come to the consideration of remedies that are specific, not that they overcome every case, but specific in that they overcome, in the main, those specific causes which produce this trouble. I have found nothing equal to the sulpho-carbolate of sodium and zinc. These combinations are formed by the addition of sulpho-carbolic acid with the appropriate base. Sulpho-carbolic acid is produced when sulphuric and carbolic acids are added together. It is also known in pharmacy under the name of *orthophenol-sulphonic acid*. So much for its pharmacology.

How should these salts be used? Of course, they differ only with regard to the base. Therefore, when an astringent antiseptic is specially desired, the zinc salt is preferable; but if, on the other hand, we are only wanting a remedy for the prevention of fermentation and an antiseptic, the sodium compound is the better.

Now, there are some additions that can be made to our prescriptions that will materially assist our remedy to do its work. For instance, the primal trouble being indigestion and faulty appropriation, we can very sensibly combine some pepsin compound; also the addition of pancreatin is well. I am in the habit of using, in mild cases, upon my first visit, something like the following, to a child from 1 to 2 years:

℞ Hyd. chl. mitis, gr. i;
Sodii sulpho-carb., gr. xx;
Sach. pepsin. (P., D. & Co.), gr. xix. M.
Div. in ch. no. x.
Sig.—One every three hours.

If there is much irritation about the stomach, I use a quarter of a grain of zinc sulpho-carbolate and three grains of bismuth salicylate to each dose, instead of the sodium. If the case be *very* severe, and there is danger of immediate death, the discharges *very* profuse and watery, I usually use something like the following:

℞ Bismuthi salicylatis, ʒii;
Zinci sulpho-carb., gr. iv;
Mist. cretæ, ʒi;
Tr. opii comp.,
Aquæ, aa ʒss. M.
Sig.—ʒi every two hours till bowels are controlled.

Then I cease the use of this recipe, and write for one like the first, using either the sodium and zinc salt, as the stomach is irritable or not, or an astringent is indicated or not.

A very convenient way of administering it to a case of lienteric diarrhœa, which is only the initial step to cholera infantum, is in the following manner:

℞ Zinci sulpho-carb., gr. vi;
Elix. lact. pep. cum bismuthi, ʒiii. M.
Sig.—ʒi every two hours, or give it in tablet triturate form.

I had Messrs. Parke, Davis & Co. to make for my druggists a lot of tab. trit. of zinci sulpho-carb., containing a quarter of a grain each, with one grain of their excellent pepsin. I use these a great deal, and like the mode of administration. When I have more made I shall use also one grain of their pure pancreatin added to each tablet. There is one other beneficial feature of this combination. The zinc has an undoubted influence over the nerve-centres, and, like arsenite of copper, accomplished *wonders* in a short time. I am confident that when the new therapeutic school, with Dr. Aulde at its head (for he deserves to be there), will be established, this drug will be put along in the line of the new remedies, acting through new channels that are not now understood.

Now, in conclusion, let me say, I have not tried to cover *all* the ground, nor to do justice even to this drug, but I hope by it to call the attention of the public to this important remedy, and to some plain facts regarding the cause of this dreaded disease, with the hope that good may come from my feeble effort.

HYDROXYLAMINE.

In 1865 Lossen first succeeded in preparing hydroxylamine, while its toxic properties were shortly thereafter studied by Binz.

Hydroxylamine readily forms salts, with acids, with the exception of carbonic acid, and these salts, in contact with the bicarbonate and the biphosphate of sodium met with in the organism, decompose in the presence of halogens, iodine, bromine, and chlorine, in water forming acids.

The most important salt of hydroxylamine is the chloride, which, nevertheless, contains free hydrochloric acid, iron, chlorides of barium and ammonium. It is a powerful reducing agent, and, introduced into the blood, it forms methæmoglobin and causes hæmoglobinuria. It also acts as a narcotic, perhaps due to its formation of nitrous oxide in the blood.

Eickhoff has utilized its reducing powers in parasitic skin-diseases, employing with success a formula composed of 1 part of the hydrochlorate of hydroxylamine to 500 each of alcohol and glycerin. He first employed this as an external lotion in five cases of lupus, five cases of herpes tonsurans, and one case of parasitic sycosis. The affected parts should first be washed with soap, and then bathed with this mixture three to five times a day. On account of the toxic and irritating properties of the remedy, it should not be employed in any stronger solution than that mentioned above. In one case of herpes tonsurans its employment produced eczema of the hairy scalp, but the cure was not on that account at all delayed. Eickhoff believes that good results may be obtained from the use of this remedy in psoriasis, parasitic eczema, and he even advocates the employment of subcutaneous injections of hydroxylamine in leprosy.

In twenty-four cases of psoriasis, Fabry, at the clinic of Doutrelepont, has found the action of hydroxylamine similar to that of chrysarobin and pyrogallic acid, with the further advantage that it does not stain the clothing. Its poisonous properties, however, necessitate considerable caution in its use, and he refers to one case in which he employed a one per mille solution of hydroxylamine in psoriasis of the knee, where its use was followed by marked albuminuria; also symptoms of local irritation are by no means rare when even fairly weak solutions are employed. Fabry advises that solutions of hydroxylamine should be neutralized by the carbonate of lime, as in that way part of the irritating properties will be removed.

Blaschko recommends instead of alcoholic solutions an ointment of one or two per cent. hydroxylamine with lanolin. He claims that this ointment causes no pain, and is equally efficacious, and is less apt to produce symptoms of poisoning.—*La Médecine Moderne*, September 18, 1890.

The Therapeutic Gazette

EDITED BY
ROBERT MEADE SMITH, A.M., M.D.,
Professor of Comparative Physiology, University of Pennsylvania,
PHILADELPHIA.

GEO. S. DAVIS,
Medical Publisher, Box 470,
DETROIT, MICH.

Philadelphia, 714 Filbert Street.

SUBSCRIPTION RATES FOR 1890.

(Journal increased to 72 pages each month.)

THERAPEUTIC GAZETTE (postage included).....$2.00
THERAPEUTIC GAZETTE with MEDICAL AGE..... 2.50
THERAPEUTIC GAZETTE with AMERICAN LANCET 3 25
THERAPEUTIC GAZETTE with AGE and LANCET... 4.00

Foreign subscriptions may be ordered through our agent in England, Mr. H. K. Lewis, Medical Publisher and Bookseller, 136 Gower Street, London. Price 10s. Remittances may be made either by Postal Order or Stamps.

Price to Foreign Subscribers direct (postage included), $2.50 (10 shillings). English postage stamps received on remittances.

Editorial communications should be addressed 332 South Twenty-first Street, Philadelphia. Articles intended for the Original Department of the GAZETTE will be accepted only with the understanding that they are contributed to it exclusively.

Business communications should be addressed to the Publishers.

Leading Articles.

THE OLD AND NEW HYPNOTICS.

OPIUM is the most ancient and still the most universally employed hypnotic. The narcotic property of opium is the result of its morphine, codeine, papaverine, and cryptopine, all somniferous alkaloids. Opium is far from being a pure hypnotic; in small doses its action is that of an excitant of the cerebrum, and generally it is only in tolerably large doses that it is hypnotic. Many persons find opium, and especially morphine, powerful promoters of wakefulness, sleep only following many hours after the ingestion of the narcotic. Opium is *par excellence* the hypnotic where the insomnia is due to pain. Opium undoubtedly exerts its power by a stupefying action on the cortical cells, rather than by any changes which it may effect in the circulation. "It is the peculiar virtue of narcotics," says Stillé, "to blunt the senses and steep the mind in forgetfulness, in spite of pain, of nervous irritability, or of tormenting thoughts."

Other narcotics—*belladonna, hyoscyamus, Indian hemp, stramonium*—have but feeble hypnotic power. They are not absolutely devoid of this power, as some writers (Headland, Tully, etc.) have affirmed, but they are not to be depended on. Lettuce and hops possess true hypnotic virtues, with mildly stupefying properties, and do not produce any arterial or cerebral excitement or delirium, any subsequent paralysis of nervous or muscular function like other narcotic agents, and particularly opium and belladonna; they act in this respect more like chloral and paraldehyde than like opium, engendering a calm, which soon passes into natural sleep.

Alcohol sometimes acts as a hypnotic, and is, in fact, frequently resorted to for that purpose. It produces sleep not because it is a vascular stimulant, clearing the overdistended blood-vessels, but because it is taken in a sufficient dose to have a narcotic effect. Ale is especially chosen for hypnotic effect; the hops with which it is impregnated undoubtedly aid the calmative action. Whiskey or brandy to have a soporific effect should be of pure quality, and the older the better; the theory that liquors long mellowing in the cask get rid of fusel oil and other alcohols not ethylic, and develop soothing ethers, seems actually supported by facts; certain it is, moreover, that new liquors adulterated with the higher atomic and more fiery alcohols, are excitant, and therefore antagonistic of sleep. A tablespoonful or two of pure whiskey taken on going to bed will often relieve the insomnia of the exhausted, the irritable, the nervous; the insomnia due to mental overwork or worry will often promptly yield to the alcoholic potion. It is well to administer the spirit in a tumbler of hot water,—as hot as can be drunk,—as the heat favorably excites the stomach, and through that organ reflexly soothes and inhibits the cerebrum.

Unfortunately, the sleep produced by alcohol is often of short duration; the patient awakes after a couple of hours but little refreshed, and may lie awake much of the night without being able to go to sleep again.

Ginger, peppermint, camphor, lavender, cardamoms, and other of the gastro-intestinal stimulants and "carminatives," taken with hot water, occasionally prove hypnotic. Even hot water alone may induce sleep if drunk freely on going to bed; in such cases it may be supposed that the insomnia is the result of a dyspeptic state. A few drops of the aromatic spirits of ammonia, or of the

ammoniated tincture of valerian, will sometimes enable the individual speedily to pass the barrier which separates the waking from the sleeping state. Many a person, rendered sleepless by a disordered stomach,—the seat of acrid fermentations,—has been enabled to realize immediate quiescence of both stomach and cerebrum by a dose of rhubarb and soda, a drachm of Carlsbad salt in a cup of hot water, or even the same quantity of bicarbonate of sodium taken in the same way.

Among the newer hypnotics must be mentioned *bromide of potassium*, which still has a great reputation as a sleep-producer. It probably produces its effects, as Vulpian taught, not by anæmiating the cortex, but by the influence which it directly exerts on the anatomical elements.* It simply "lessens the functional activity of the brain, without disturbing the relation of one part to another" (Brunton). Where the indication is to diminish cerebral or spinal irritability; where the brain is hyperæmic from excess of mental toil, from prolonged watching, from abuse of stimulants (coffee, alcohol, etc.); in nervous erethism characterized by emotional excitability, exaggeration of the reflex activity; in the insomnia of fevers, and in genito-urinary insomnia; bromide of potassium (at least till the discovery of chloral) has been the best hypnotic known to the profession. It depresses innervation generally, and is a debilitant of the heart; hence in the feeble, asthenic, and cardiac it is to be prescribed with caution. The dose is large,—20 to 40, and even 60 grains at bedtime. It may often with advantage be associated with alcohol, calisaya, and other hypnotics, as chloral and morphine.

The discovery by Liebreich, in 1869, of the hypnotic properties of *hydrate of chloral* may be regarded as one of the most important therapeutic discoveries of modern times. The experience of the past twenty-one years has more than justified the first conclusions respecting its actions and uses, and it may still be regarded as, on the whole, the best hypnotic we possess. Its principal advantages are—1. It is speedy and generally certain in its action. 2. There is no preliminary period of excitement. 3. Its effects are prolonged, and the sleep which it produces is calm, tranquil, and refreshing; the patient wakes out of the chloral sleep as out of natural sleep. 4. It can be given with good results in cases where opium is not tolerated. 5. There are seldom any unpleasant or injurious after-effects; it does not disturb the secretions or excretions, as do many other hypnotics. 6. It has a wide range of usefulness besides being simply a sleep producer; in all morbid cerebro-spinal conditions attendant with excitation, delirium, or spasm it is markedly beneficial; in the insomnia due to delirium tremens, acute mania, general paralysis of the insane, puerperal mania, chorea, tetanus, etc., it is of great value.

Among its disadvantages are—1. It is a cardiac depressant, and therefore must be given with great caution or withheld in organic diseases of the heart. 2. It is a dangerous remedy when long continued, its effects on the brain, and consequently on the mental functions and disposition, being deplorable. The *chloral habit* is, doubtless, quite as bad as the morphine habit. "Its employment," says MacFarlane, "is so fraught with risk that its use, except under medical advice, is much to be deprecated.

"At first the mental depression and melancholia from which the patient suffers are alleviated by a dose of the drug; after a time, it fails to soothe, and may even excite. The victim gravitates into a pitiable state of mental weakness and demoralization, becoming childish, vacillating, and untruthful; sometimes dejected, at other times excited, and having suicidal tendencies. The symptoms are due to cerebral anæmia and enervation of the heart, lungs, etc.†"

Next, perhaps, in importance to chloral, comes *sulphonal*. This is also a pure hypnotic; it does not excite, cause delirium, affect the secretions, etc., like narcotics. The sleep which it produces is marvellously like natural sleep. Few unpleasant symptoms—at the most, a little nausea, vertigo, titubation, which are temporary—attend its employment. It is, however, not an analgesic nor an antispasmodic; does not depress reflex spinal excitability, like chloral or bromide; does not enfeeble the heart. In the insomnia of neurasthenia, mental depression, overwork, and worry it often has a charming effect.

There is a class of patients who are especially benefited by sulphonal. They are men of business who are beset with cares. They go to sleep at a certain hour, but are sure to wake between one and three o'clock in the

* "Leçons sur les Vaso-Moteurs."

† MacFarlane, "Insomnia and its Therapeutics," 1890.

morning, and then they will lie awake till morning; may possibly snatch an hour or two of sleep after daylight. Here a dose of 20 grains of sulphonal at bedtime will hardly fail to give a good night's sleep, and by being taken a few nights in succession, a morbid habit may be broken.

Paraldehyde is so nauseous that many patients refuse to take it. It is less analgesic than chloral; is not a cardiac poison. It is thought to be superior to chloral in mental alienation, in nervous insomnia, and in the insomnia due to abuse of alcohol. It has been found to be very valuable as a calmative and hypnotic in hysteria; like chloral, it is antispasmodic. It is said not to produce injurious effects if taken for a great length of time, nor does it soon lose its effect. It is more effectual than sulphonal in the insomnia of acute or chronic disease where pain, cough, dyspnœa, or fever exist (C. M. Hay). It belongs to the class of pure hypnotics, along with sulphonal and chloral.

Urethan is often of service in sleeplessness due to slight causes. The dose is rather large,—20 to 30 grains. It is by no means an active hypnotic, and is not analgesic. In fact, its range of usefulness is limited to psychical insomnia, and to insomnia due to mental or physical overwork.

Somnal has been for too short a time before the profession to permit any critical judgment of its merits. In 30-grain doses it is said "to act half an hour after the ingestion, causing a calm sleep of six or eight hours' duration, without any disagreeable after-effects. It has no action on the pulse, respiration, or temperature." The writer from whom we have quoted (Boymond) adds, that "it possesses the properties of chloral, without any of the disadvantages of the latter drug."*

Amylene hydrate is given in large doses,—60 to 90 grains. The most recent and thorough testings of this drug have been made by Dr. W. H. Flint (see THERAPEUTIC GAZETTE, January 15, 1890, p. 69). "In therapeutic doses it produces sleep by its soporific action on the cerebrum. It is applicable, therapeutically, to insomnia from nervousness, from excessive mental exertion, from anæmia, fevers, insanity, cardiac diseases, the opium habit;" is not efficacious in insomnia from pain, cough, and from that due to cardiac and uræmic dyspnœa." After-effects are slight or *nil.*

Chloralamide is another pure hypnotic which seems to be of considerable value. We have little to add respecting this new hypnotic to what we have said in former numbers of the THERAPEUTIC GAZETTE (see the volume for 1889, pp. 611, 686). According to some recent investigations of Dr. Langgaard, of Berlin, the new drug is a less powerful hypnotic, weight for weight, than hydrate of chloral. The ordinary dose for an adult is 30 to 45 grains. Sleep comes on in from half an hour to three hours after the drug has been taken. Chloralamide shows itself to the best advantage where the sleeplessness is of purely nervous origin, and is not contraindicated where there is some amount of pain, and where there is a moderate amount of cough, as well as in a number of mental affections not accompanied by any considerable degree of excitement. It has proved serviceable in delirium tremens, and even in cardia asthma. It possesses a real advantage over chloral in not being a cardiac depressant.

Where shall the list of new hypnotics end? We have not given all, or nearly all, the agents, new and old, for which hypnotic virtues are claimed, but the very abundance of these agents shows the more or less unsatisfactory nature of all; it suggests, moreover, the multiplicity of causes productive of insomnia and the essential unrest of our modern life.

* *Semaine Médicale*, 1889, p. 408.

ANTIPHLOGISTICS.

WITH the adoption of new views respecting the pathology of inflammation, the utility of many of the agents of the old antiphlogistic medication has been called in question. As long as inflammation was regarded as due to excessive contractility of the blood-vessels (Hastings), or to spasm of the arterioles (Cullen), or to active dilatation (John Hunter), or to excessive stimulus (Broussais), a depleting and even debilitating treatment, in whose effects the heart and arteries should immediately participate, the most powerful agent of which treatment was general blood-letting, found justification. Sir Astley Cooper, who recognized "the increased action or excitement of the larger arteries leading to the inflamed part" as one principal factor, and who also insisted on an overaction of the inflamed capillaries, also taught that bleeding is "the principal means of relieving inflammation;" "it lessens the action of the whole sanguiniferous system, and, of course, of that part of it which is directly concerned in regu-

lating the quantity of blood transmitted to the part affected." Nauseating medicines, as tartar emetic and powerful purgatives, with active diaphoretics, which both weaken the pulse and determine blood away from the inflamed parts, were also antiphlogistic agents much relied on.*

Among the essentially modern views of inflammation we need mention only the *exaggerated-nutrition* theory of Virchow and Stricker, and the *vascular alteration* theory of Cohnheim; the neuro-humoral theories have been almost completely abandoned.

It cannot be maintained that the cellular theory, in which nutritive and formative changes in the tissue-cells constitute the essence of inflammation, now finds many defenders, and it is doubtful whether Virchow himself holds to it in its original form. The objections have been sufficiently stated by Burdon Sanderson, Cohnheim, and others. The view which now receives most general acceptance is that so forcibly set forth by Burdon Sanderson in his Lumleian lectures, and by Cohnheim in his "General Pathology," a translation of which has been lately published by the Sydenham Society. According to this theory, the proximate cause, the essential condition of inflammation, is a molecular alteration of the blood-vessels—particularly of the veins and capillaries—of an injured part, an alteration by which the permeability and porousness of the walls is augmented, with a resulting sero-fibrinous or albuminous exudation, and emigration of white and red blood corpuscles. The stasis and albuminous exudation, with the diapedesis of leucocytes, constitute the central phenomenon, the necessary objective sign of inflammation.

We have not time here to recapitulate the arguments by which this theory seems to be removed from the realm of hypothesis to that of established doctrine. It is one of the merits of the late lamented Cohnheim that he has given us so lucid an exposition of this pathological notion, making it almost a matter of experimental demonstration. The essential nature of inflammation, then, is that it is not simply a modification of normal processes, but a destruction. Sanderson emphasizes the words *damage* and *injury* in his definition. We have not disorder of function, but *arrest*, tending towards death.

Gerster would add here (with much probability) the *rôle* of microbes as necessary factors; these microbes generate ptomaïnes, whose toxic influence affects the adjacent vaso-motor nerves, causing a strong vascular dilatation, which becomes manifest in the shape of an active hyperæmia,—"*rubor*," and subsequent exudations,—"*turgor*." The infiltrated portions, devitalized by suppression of the normal circulation, readily succumb to the inroads of millions of micro-organisms, and necrosis and suppuration follow.†

According to this view, the restoration of the part to its natural state must be as simple as its departure from it,—*i.e.*, by "resolution,"—the temporarily-arrested process goes on again; or, if the process has proceeded to the death of the affected part, the destroyed portion must be restored by an exogenous growth from the margin; the cells outside the limit of injury must grow into the gap and fill it up.‡

With this brief statement of the modern doctrine of inflammation, we come to the subject of antiphlogistic medication, and may ask whether it has any place in the new pathology?

Doubtless the word *antiphlogistic* has come to sound a little old-fashioned, and is seldom pronounced by the medical man of to-day. It has so long been used to denote bloodletting that it means little else to the ordinary medical mind. It is a significant fact that in one of the most popular American treatises on therapeutics—that of H. C. Wood—the word *antiphlogistic* is not given at all.

And yet the true meaning of the term is *a remedy to oppose inflammation*; to prevent, to arrest it, to counteract its effects; and in this sense the term is still a legitimate one. Much may be effectively done in the earlier stages—before the inflammation is actually established—to prevent, to arrest, to favorably modify the destructive process. Removal of the cause when this is possible; rest of the disordered part or organ; elevation of a hyperæmic limb; the judicious application of cold, to lessen local determination of blood; the application of a sinapism to the surface, to produce powerful revulsion; the exhibition of a purgative or diaphoretic, to open up other vascular sluiceways, and drive blood from the focus of congestion; even the administration of veratrum, to diminish vascular tension, and hence local fluxion, are all antiphlogistic means, which, if employed sufficiently early, may

* *Vide* "Cooper's Surgical Dictionary," 4th ed., art. "Inflammation."

† Gerster, "Septic and Aseptic Surgery," p. 179.

‡ Burdon Sanderson, *loc. cit.*

either prevent an inflammation or minimize its effects. When, however, an inflammation is established, when there is a local injury that will require days for its reparation, and especially the active co-operation of the healthy tissue-cells of the vicinity, whose vitality and whose nutrition (no more than that of the inflamed part) should not be impaired by depleting remedies, then therapeutic intervention should be in the direction of assisting the natural processes of restoration. Here topical bleedings often give remarkable relief to an inflamed part, both by diminishing excessive tension and thus saving the tissues from destruction, and by giving free vent to spoiled exudation elements, and especially to pus. Deep incisions made early in a developing phlegmon, felon, or carbuncle, followed by antiseptic lotions, and, in some cases, drainage, will often abort the inflammation by removing tension and by emptying the focus of its infective contents. By stopping the growth and multiplication of microbes, the spread of the inflammation is stopped. Gerster adds, as necessary antiphlogistic measures of considerable importance, that "all conditions tending to impede free arterial and venous circulation must be eliminated by proper position,—that is, elevation of limbs, removal of constricting dressings or clothing." Lastly, the necessity of rest to the inflamed part is sufficiently obvious.

Purging, though reckoned "as a principal means of diminishing inflammation" by the old authorities, is not to be prescribed as a routine measure. It is hard to understand how, by diminishing the vital forces or reducing the watery constituents of the blood, one is going to help restore a part that has been damaged in its vital properties. "As for purgatives," says Boyer,* "they must be used with discretion. There are none of them antiphlogistic, as has been pretended. They always produce more or less irritation, and can only be applicable when the cause of the inflammation is in the intestinal canal." From this judgment of one of the earliest writers of this century we can hardly demur. At the same time the faith of many practitioners in the *derivative* power of purging in some inflammations (particularly those of the encephalon) cannot be easily shaken.

There is general agreement as to the utility of *cold applications* in the first stages of local inflammation, and ice to the head is still vaunted in the treatment of the acute period of encephalic inflammations. Refrigeration is a severe measure, which should be prescribed with great care and judgment. It meets certain symptoms of the inflammation, diminishing the heat, the exudation, the morbid sensibility and pain, the determination of blood, and perhaps favors the contraction and tonicity of the blood-vessels. At the same time there is danger that the prolonged application of cold, especially in asthenic subjects, may injuriously depress the already lowered vitality of the inflamed part, arresting the nutritive processes, and entailing gangrene. Certainly a very moderate application of cold in some subjects seems to be followed by severe reaction and an aggravation of the local mischief. Hence cold is not to be indiscriminately advised. Warm applications are generally safer and more soothing. It is, perhaps, not always easy to specify those cases which are likely to be most benefited by cold and those where heat is especially indicated, and surgical authorities generally insist that the feelings of the patient are the best guide on this point. Heat is a powerful stimulant of the circulation, is conservative of the vitality of a part, and promotes suppuration where this is inevitable. A clean cloth, dipped in and wrung out of hot water, covered over with a piece of oiled silk, says Gerster, is the best, the cheapest, and the least unappetizing of all cataplasms.

Counter irritants are supposed to act by a reflex influence on the vaso-motor or trophic nerves of an inflamed part, as well as those of the immediate vicinity, promoting vascular tonicity and contractility, and stimulating repair. One may be justified in indulging some scepticism as to the real benefit which these outward applications confer in the case of any superficial or deep seated inflammation, especially when that inflammation is acute. It must be remembered *that stimulating or depressing nervous influence goes really but a little way in modifying an inflammation*, for it has been shown that inflammation is *essentially* independent of the nervous system. The good effect of sinapisms is almost certain to be transitory, and as for blisters, they are known to aggravate acute stages, and authorities are far from being agreed as to their utility in the declining periods of an inflammation. Certainly very many good therapeutists see sufficient reason to dispense with them altogether.

From our present point of view, *general blood letting* can do nothing to prevent, check,

* "Traité des Maladies Chirurgicales," t. i. p. 39.

or moderate an inflammation, though possibly sometimes remedial in congestion. The local damage, the vascular alteration, cannot be attenuated by bleeding. More than that, bleeding is absolutely harmful, by lowering the vital forces, and so retarding resolution and restoration, and favoring microbial invasion and proliferation. As for the utility of blood-letting in general inflammations, and especially in pneumonia, so long considered as the type of internal inflammations,—it is not necessary that we should repeat here the reasons which have led to the almost complete rejection of this ancient therapeutic measure in just those cases where it was formerly thought to be pre-eminently indicated. These reasons were stated by J. Hughes Bennett, almost forty years ago, in a masterly examination of the whole subject, and subsequent writers have done little but confirm his conclusions. Germain Sée, in his "Diseases of the Lungs of a Specific Character," taking his stand-point from the modern pathology, which insists on the parasitic nature of pneumonia, has forcibly restated the arguments which have led to the abandonment of bleeding; and when we ask ourselves, in consideration of the fact that the pneumonic parasite is not affected injuriously by bleeding, that bleeding does not diminish the mortality of the disease or abridge its duration, "Is blood-letting really an antiphlogistic measure?" we are obliged to answer the question in the negative.

PHARMACOLOGICAL AND THERAPEUTIC PROPERTIES OF PHENYL-URETHAN, OR EUPHORIN.

THE name euphorin has been suggested by Professor Giacosa for phenyl-urethan,

$$CO<\begin{matrix}OC_2H_5\\NH(C_6H_5),\end{matrix}$$

a combination resulting from the action of æthylic ether on aniline. It is a white, crystalline powder, with a faint aromatic odor, and a taste which, at first scarcely appreciable, subsequently becomes more marked, and resembles cloves.

Euphorin is only soluble with great difficulty in cold water, is very soluble in alcohol, and in mixtures of alcohol and water, particularly in white wines, which seem to be especially suitable for its administration. In the *Therapeutische Monatshefte* for September, 1890, Dr. L. Sansoni, of Turin, contributes the results of his clinical experiments made with this drug, referring at the same time to the study of Professor Giacosa as to the pharmacological action of euphorin, which, however, appears not to have been yet published.

Dr. Sansoni has found that small amounts of euphorin are well supported by man and the higher animals, even intraperitoneal injections of a solution of sixty grains of euphorin in alcohol in a dog weighing twenty pounds producing no serious symptoms; while to produce death in a rabbit weighing four pounds, seventy-five grains of euphorin suspended in water and introduced into the stomach through a sound were required, death occurring after five hours, accompanied by symptoms of collapse, gradual reduction of temperature, progressive weakness, anæsthesia, and suppression of reflexes. In a healthy individual doses of from 1½ to 3 grains produced no change in the pulse, respiration, or temperature. In the dog, as determined by the use of a mercurial manometer, no reduction of blood-pressure followed the administration of even large doses. Still more worthy of note is the statement by Dr. Sansoni, in view of the chemical composition of this substance, that euphorin never produces the appearance of methæmoglobin, and even in cases of fatal poisoning the blood always remains normal, no alteration being detectable by means of the spectroscope. After the administration of euphorin the urine shows the P-amido-phenol reaction either directly after the excretion of the urine or after rendering it alkaline by potassium carbonate; neither phenol nor aniline are, however, to be found in the urine, although euphorin liberates small amounts of phenol when in contact with putrefying bodies. The author further adds that euphorin apparently increases the production of urea, but does not lead to the appearance in the urine of albumen or other reducing substances.

Dr. Sansoni writes that he has employed this substance in a large variety of febrile affections, and his results show that it possesses marked antithermic, antiseptic, and antirheumatic properties, while in a few cases it appeared to act as an analgesic. Given in a number of acute and chronic febrile affections, in the pure form, in capsules or dissolved in wine, marked reduction of temperature was noted to have occurred within an hour or an hour and a half. In a few cases, he states, immediately after the administration of the remedy, the tempera-

ture was elevated for a few tenths degree, but that the subsequent fall of temperature was then proportionately greater. The fall of temperature was accompanied by sensations of heat, which varied according to the peculiarity of the individual and the amount of drug given, and were followed by a more or less abundant sweat secretion. The maximum depression of temperature was ordinarily reached in three or four hours, and the effect lasted, as a rule, five to seven hours. The subsequent restoration of the high temperature ordinarily occurred suddenly, and was accompanied by chills, whose intensity and duration were in proportion to the severity of the disease and the intensity of the fever. In a few cases in which the fever was very high and the chill very intense and prolonged, under the influence of the remedy the temperature fell below normal; in one case more than 2° C., and that without exceeding the ordinary doses.

During the apyrexia produced by this remedy the patients usually noted improvement in their general condition, although sometimes complaining of chilliness, while in but few cases was there any cyanosis; where this occurred it was slight and transient. The pulse and respiration remained regular, becoming proportionately slow to the reduction of temperature.

Dr. Sansoni states in the most positive manner that collapse was never produced by this drug even when the temperature was reduced far below normal, even to the point which would ordinarily be accompanied by the production of collapse if due to the exhibition of the other antipyretic remedies. Different individuals offer different degrees of susceptibility to the action of euphorin, and the author recommends that, when it is used for the first time, small doses should be given, not exceeding usually fifteen to twenty-two grains in a day. Dr. Sansoni, further, makes the statement that, while these doses are ordinarily well borne by feeble individuals, in some cases where the constitution is apparently a much stronger one extremely low temperature will be produced, but without the appearance of other symptoms of collapse. Seven and one-half grains of euphorin correspond to about fifteen grains of antipyrin.

Dr. Sansoni has also employed euphorin in acute and chronic rheumatism, in which affections larger doses are required than when the remedy is used simply as an antipyretic. He recommends its use in the amount of 22 to 30 grains, which are better given in a few large doses than in a number of divided small doses. It is claimed in acute rheumatism to readily reduce the pain and fever, while in chronic cases which had already resisted all the other specifics, such as preparations of the salicylates, antipyrin, antifebrin, and phenacetin, but slight relief in pain and increased movement was all that was obtained. The author further made a number of trials of euphorin to determine as to whether it possessed an analgesic effect in tabes dorsalis, neuralgia, orchitis, etc., and he states that in some cases the effects were very satisfactory, while in others but a moderate relief of pain, or entire absence of any effect was noted. He has also used it as an external dressing in indolent ulcers in the form of a powder, and has found that it has in his hands acted better than any other remedy; and although this employment of euphorin is said to produce slight pain, yet its other great advantages more than overbalance this effect.

Dr. Sansoni attributes the reduction of temperature to the dilatation of the peripheral blood-vessels, as is the case with most of the other antipyretics.

It is worthy of note, in reference to the action of this remedy, that although it closely agrees with antifebrin in its constitution, yet it is claimed by Dr. Sansoni to be entirely free from any action on the blood, and its use seems practically to be free from any danger of collapse. Pharmacologically, therefore, its action is more allied to urethan.

THE TREATMENT OF SYPHILIS WITH HYDROCHLORIC-GLUTIN-PEPTONE-SUBLIMATE.

ALTHOUGH numerous methods and innumerable preparations have been recommended for the mercurial treatment of syphilis, yet there is scarcely one of them whose use is not largely detracted from by some important defect or objection. It is believed that the employment of the inunction method and the use of the insoluble salts of mercury possess great advantages; certainly by both of these methods mercury is rapidly absorbed, and so is capable of producing energetic effects on the syphilitic process. The method of subcutaneous injection has the advantages over the inunction method of greater cleanliness and convenience, and, further, its employment does not require more frequent intervals than from four to five days. The disadvantage of the

subcutaneous method principally consists in the fact that when once a certain amount of mercury has been injected subcutaneously its subsequent control becomes absolutely impossible: so that when after the hypodermic injection symptoms of stomatitis appear, the physician is absolutely helpless to control further absorption; besides it is possible that the quantity of mercury injected into the skin may excite inflammatory action, and so become encapsulated, and so perhaps through a trauma be absorbed when this is least desirable. In case of the soluble preparations the state of affairs is different when the injections are made daily, the mercury is rapidly absorbed and eliminated, and should stomatitis appear, this complication may be arrested by a simple suspension of injections. But this rapid absorbability of the mercury salts, while producing rapid action on the syphilitic process, are, nevertheless, quite as rapidly excreted, and their action is, therefore, a transient one. In estimating the value of any mercurial preparations two points are to be considered,—first, the disappearance of the pressing symptoms of syphilis, and then the occurrence of relapses, while, further, the usefulness of the preparation is not only qualified by the promptness of its action, but also by its freedom from after-effects, either local or general.

There are but few soluble preparations of mercury which at all fulfil these requirements. Any addition to the list is, therefore, to be regarded as a great advance in our methods of combating this disease.

In the *Therapeutische Monatshefte* for September 18, 1890, Dr. Hüfler, assistant in the clinic of Professor Strümpell, in Erlangen, describes, under the name of hydrochloric-glutin-peptone-sublimate, a preparation prepared by Dr. Paal, of the same institution. The author writes that by treating gelatin with dilute hydrochloric acid, gelatin (glutin) peptone results, which contains about twelve per cent. of hydrochloric acid, and is soluble in every proportion, not only in water, but in alcohol, and unites with corrosive sublimate to form double salts, of which one, containing fifty per cent. of sublimate, is insoluble in alcohol, while the other, containing a smaller proportion of corrosive sublimate, is soluble in alcohol. Both double salts are soluble in water. Dr. Hüfler has employed in his therapeutic studies the double salt, containing precisely twenty-five per cent. of corrosive sublimate. It occurs in white shining scales, in the form of a white hygroscopic powder. Its watery solution is not precipitated either by the caustic alkalies or alkaline carbonates or by blood or solutions of albumen. The corrosive characters of the sublimate are claimed to be lost through combination with the peptone salts, and in this respect, and in its chemical composition, it differs from all hitherto described sublimate peptones. The majority of the peptones are made by precipitating a watery solution of peptone with a solution of corrosive sublimate, the corrosive sublimate peptone then falling as a white insoluble precipitate, which is redissolved in a three to five per cent. salt solution. Such a solution is, however, extremely unstable, and in that respect differs from the preparation described by Dr. Hüfler, which is claimed to undergo no alteration, even although kept exposed to the light in glass-stoppered bottles for more than a year.

Dr. Hüfler writes that he has since the beginning of June, 1889, to the end of March, 1890, treated sixty patients at the Erlangen Clinic and ten in private practice with this preparation, thirteen hundred injections of the hydrochloric-glutin-peptone-sublimate being made in all. The solutions were so diluted that each syringeful contained one-sixth grain of corrosive sublimate. The injections were either made subcutaneously or into the muscles in the gluteal region, one injection being made each day as long as any evidences of syphilis were present. Whenever any symptoms of stomatitis appeared, the injections were suspended for four or five days, and the author states that in no case did any severe case of stomatitis occur, although out of these seventy patients, in sixteen the treatment had to be suspended on account of commencing trouble in the mouth. The cases embraced a large number of varieties of syphilitic manifestations, and the author claims that in all success was very prompt. The average number of injections in all the patients was twenty. The highest number forty-five, the smallest five. The pain occasioned by the injection is stated to be trivial. In no case was an abscess occasioned, even although the injections were not performed under strict antiseptic precautions. The most that was done was to wash the part with a dilute solution of carbolic acid, in which the canula of the syringe had been placed for some time before employment. The author concludes by the statement that this sublimate-peptone is preferable to any other method of employing the mercury treatment of syphilis, *first*, on account of its certain and rapid action; *second*,

on account of the almost freedom from pain attending the injections; and, *third*, on account of the slight local irritant effects.

It is hardly necessary to add that this preparation is, as is the case with every one of the new remedies introduced by our enterprising German *confrères*, protected by a patent.

Reports on Therapeutic Progress.

THE ANALGESIC VALUE OF ANTIPYRIN INTRA- AND POST-PARTUM.

First used as an antipyretic in large doses, antipyrin has been found during the past five years to be an almost universal panacea in smaller doses for "nerve pain," and is now prescribed empirically in all cases of neuralgia of whatever part of the body. Its value in certain cases of dysmenorrhœa of the so-called "spasmodic" type first directed attention to the generative organs as a field for its use, and the medical journals up to the present time have scattered through them results arising from the use of antipyrin (certainly of a most variable character) in connection with the pregnant condition and labor. Windelschmidt published, among the earlier observers, an interesting case of relief from dysmenorrhœa which had lasted eight days, the pain being very violent. Relief was obtained by rectal injections of three doses of 2 grammes (about 31 grains) of the drug; the two first with an interval of twelve hours, the third twenty-four hours later. Convulsive action, which was present before its administration, also ceased. Dellenbaugh and Chouppe also relate similar instances; the latter, in addition, found great benefit from a rectal injection given to a patient with a painful uterine myoma which had resisted all other remedies.

The mode in which this drug relieves uterine pain is doubtful. It is generally acknowledged that the most essential properties of the uterine muscular fibres are extensibility, retractility, contractility, the last being quite distinct from retractility, and always occurring when a foreign body is to be expelled from the uterus.

Dr. John Phillips suggests that uterine pains are produced by two different mechanisms (*Lancet*, September 20, 1890),—*first*, when there is an absence of retractility, and as a consequence a formation of clots; and, *second*, when, in spite of sufficient retractility, pains persist, in consequence of intemperate use of ergot, or retention of placental *débris*.

Rivière thinks that antipyrin relieves this pain entirely, and nerve pain or a neuralgia, and that its action upon muscular fibre is negative. He quotes Chiara in support of this assertion, who, as the result of its use in twelve cases of pregnancy, found that in therapeutic doses it does not show appreciable effect enough to make one believe in it as having an oxytocic or exciting action on the uterine fibre during pregnancy and the physiological state.

The questions which seem to be at issue regarding the use of this drug are the following: 1. Does its administration during or immediately after labor tend to relieve pain, and, if so, at what stage are its effects most marked? 2. Has it any effect on the uterine pains in augmenting their number or intensity, or the reverse? 3. Is cervical dilatation more rapid under its influence? 4. Does its administration promote or tend to post-partum hemorrhage? 5. What is its effect upon the process of lactation? The property it possesses of diminishing high temperatures, as in puerperal fever, is of the highest value, but it appears to be outside the questions at issue.

Dr. Phillips thinks that a word of warning should be given as to its indiscriminate use in large doses in attempting to reduce pyrexia, as he has met with records of several deaths from collapse after its use.

Under the first heading the question resolves itself naturally into the relative value of the drug during the two stages,—intra- and post-partum. To elicit an answer to these inquiries, he carefully administered the drug to forty-two cases, and selected as many primiparæ as possible, in consequence of the usually more lengthened stage of intra-partum; thirty-one were of this type. The others—eleven in number—were chosen at random. The drug was not given until labor had commenced, and until the dilating pains had set in regularly; the number occurring in an hour was noted, and then compared with those which passed in the same time shortly after the administration of the drug. The temperature and pulse were taken at regular intervals, and notes made at the time as to the severity of the pains, and the patient's statements as to the relief given or not by the medicine. The method of administration was by the mouth, and in 15-grain doses, made up of half a drachm of compound spirit of ammonium and cinnam-

water, including two doses given during the expulsive stage. Sixty grains were given. Sickness never occurred after a dose during the first stage, and after the second during the expulsive stage. It was noticed that there was a tendency to retardation, at first becoming more marked after the second dose. There was no doubt as to the relief from the pain after the first dose, marked effect after the second dose, but absolutely none during the expulsive stage. Dr. Phillips publishes a table showing the results of the administration of the drug in the forty-two cases. From this it would seem that in the stage of dilatation, in fifteen cases out of thirty-one, in which the drug was administered, or in nearly fifty per cent., it was very beneficial,—that is, the patient either strongly asserted that she felt great relief, or it was self-evident by her falling asleep or becoming more quiescent.

Among the multiparæ the number relieved was not so great,—namely, 36.3 per cent. On the other hand, the absolute failures among the primiparæ amounted to 32.2 per cent., while among the multiparæ it amounted to 36.3 per cent. Queirel, who admits the value of the drug chiefly in this stage, found its success undoubted in fifteen women out of twenty, or seventy-five per cent. Of these fifteen patients, eleven were multiparæ and the other four primiparæ. Of the five refractive patients, only one was a multipara, thus concluding rather that the action of antipyrin is more marked on that class. Winkle never administers it except during the first stage, and he has found the relief almost general following its administration.

By comparing statistics, when the drug was taken and when not, he gathered that it does not increase the duration of the first stage, but, on the contrary, tends to shorten it on an average of about half an hour, while in the second stage it remains practically the same. In the expulsive stage the results were frequently negative, as absolute relief was never observed either in primiparæ or multiparæ patients, and this statement is corroborated by nearly all writers on this subject, with one or two exceptions. Its administration post-partum for after-pains was chiefly among multiparæ, where Dr. Phillips found it to be very beneficial in five out of eight cases, and he found that the failures were those in which the after-pains were chiefly due to collection and expulsion of blood clots, while the successful ones were those in which the pains were more of a grinding or neuralgic character and not followed by the passage of clots. Dr. Phillips, however, has noted that the use of antipyrin greatly reduces the secretion of milk, and, in cases where weaning is necessary, early after delivery, the use of antipyrin in 15 grain doses three times daily will in many cases entirely arrest the milk secretion. As regards its direct influence on the heart and temperature, Dr. Phillips's experience shows that in the great number of cases there was no increase in the pulse, but a slight reduction of temperature; half an hour after its administration the pulse was diminished in frequency, the patient having at the time a sensation of palpitation, while respiration did not appear to be appreciably affected. Antipyrin may be administered either by the mouth, rectum, or by subcutaneous injection, in the latter case the pain being greatly reduced by the addition of cocaine. By mouth it should always be taken with some diffusible stimulant, like ammonia; and Dr. Phillips draws the following conclusions from his experience with antipyrin in this connection: 1. That antipyrin, in doses of 15 grains, repeated at proper intervals, is a remedy of great value in the dilating stage of labor, and more especially in primiparæ, but that its uncertainty of action renders it less reliable than chloral. 2. That during the expulsive stage of labor it is useless as an analgesic, in whatever way it may be administered. 3. That in certain kinds of after-pains it is very efficacious. 4. That it is without any ecbolic properties, and has little or no effect on the frequency of occurrence of labor-pains during the dilating stage, and does not aid dilatation of the os uteri. 5. That the effect of the drug appears to be more marked on impressionable and neurotic women, and those of dark complexion and spare frame, than on others. 6. That it should never be given by mouth without the addition of a diffusible stimulant.

PROTOPINE—A NEW OPIUM ALKALOID.

Protopine was first isolated from opium in 1870 by Hesse. It has a formula of $C_{20}H_{19}O_5$, and is present in but small amount. Since then its presence has been detected by Eykmann in the *Macleya cordata*, and by Selle in the *Chelidonium majus*, plants which also belong to the family of the Paveraceæ.

Dr. Engel has recently made some experiments on cold-blooded animals (frogs) and warm-blooded animals (guinea-pigs, cats

and rabbits) to determine the physiological properties of protopine, and his results, which are summarized in the following statements, are published in the *Gazette Médicale de Paris*, October 11, 1890:

1. In small doses protopine exercises on the frog narcotic effects similar to those produced by other opium alkaloids.

2. In large doses it produces a paralyzing action on the muscular substance, and on the terminal ramifications of the peripheral nerves.

3. With small or moderate doses reflex action is not abolished, although this occurs when large doses are given.

4. Protopine produces toxic effects in mammals comparable to those produced by camphor, death being produced by a paralysis of the respiratory centre.

SUBCUTANEOUS INJECTION OF WATER AND ITS THERAPEUTIC USES.

According to the Swiss correspondent of the *British Medical Journal* for September 20, 1890, PROFESSOR SAHLI, of Berne, has just published a paper in which he forcibly draws attention to a simple method of rapid and safe introduction of large quantities of water into the system. The method consists in the subcutaneous injection of a sterilized blood-warm physiological saline solution (that is, a .73 per cent. solution of chloride of sodium) by means of a large Erlenmeyer's flask, with an elastic tube and a hollow needle as thick as a knitting-needle. As much as one litre of the solution can be easily injected in from five to fifteen minutes. If necessary, the procedure may be safely repeated four or five times a day. The best situation for the injection is the anterior abdominal wall. On each occasion the skin should previously be thoroughly washed with soap and corrosive sublimate, and the puncture subsequently sealed with aseptic cotton-wool and collodion. Under such precautions not the slightest signs of any local reaction are ever observed. In some patients, especially in those with flabby abdominal integuments, the procedure causes but trifling pain; in very sensitive or restless persons, however, general anæsthesia is advisable. The effects of the injections are thought to be as follows: 1. Under certain conditions they thoroughly wash out the patient's system by inducing profuse diuresis, accompanied by a strikingly increased elimination of solid constituents of the urine. 2. They dilute the body juices and poisonous substances present therein. 3. They furnish the necessary water-supply to dehydrated tissues. 4. They aid the filling of blood-vessels, and thus raise an unduly lowered arterial tension. Such subcutaneous injection of water is indicated: 1. In cases of uræmia complicating the course of either acute or chronic nephritis, where the injection of a litre of the solution once or twice daily is, as a rule, rapidly followed by a striking abatement of all symptoms. The best results, however, are frequently obtained when the injections are combined with the internal administration of digitalis. 2. In the "typhoid" state, where frequently even after the very first injection delirium ceases, the pulse becomes stronger and fuller, the tongue moister, etc. 3. In Asiatic cholera, cholera nostras, infantile diarrhœa. 4. In poisoning by any toxic substances, but especially by those which are liable to be eliminated from the organisms through the kidneys. 5. In cases where an internal use of water should be avoided (in order to secure physiological rest of the gastro-intestinal tract),—for instance, in cases of perforation of the stomach or bowel, peritonitis, ileus, etc. 6. In cases of acute anæmia from hemorrhage. The method is contraindicated (1) in cases of incipient or expected pulmonary œdema; and (2) in the presence of severe dropsy.

THE TREATMENT OF BURNS.

In the Friedrichshain Hospital in Berlin the following is the method of treatment of burns employed by DR. BARDELEBEN (*Lyon Médicale*, September 14, 1890).

The burned surface is first carefully washed with a two or three per cent. solution of carbolic acid or a three per mille solution of salicylic acid. The blisters are then opened, and the entire surface covered with subnitrate of bismuth finely powdered, and over this a layer of cotton-wool. This dressing is to be renewed as soon as it becomes at all moistened by discharges from the wound. If the burn is very extensive, an ointment of bismuth is substituted for the dry powder.

Dr. Bardeleben asserts that with this dressing cicatrization is much more rapid and suffering much more quickly relieved than is the case with any other form of treatment.

He states that, in spite of the large quantities of bismuth which he has employed, he has never seen any symptoms of poisoning follow its use.

OPERATIONS ON THE PROSTATE.

In a paper presented to the Mississippi Valley Medical Association at Louisville, Dr. Wm. T. Belfield, of Chicago, collects one hundred and thirty-three cases of operations upon the hypertrophied prostate, including eight of his own, as follows: Forty-one by perineal incision, mortality nine per cent.; eighty-eight by suprapubic cystotomy, mortality sixteen per cent.; four by combined perineal and suprapubic incision, none fatal.

In fifty-six of these cases the essential facts before and after operation are furnished; they had been the subjects of cystitis, and dependent upon the catheter for periods varying from one to ten years. In all the cystitis was cured. In thirty-eight (two-thirds) voluntary urination was restored, and continued during the time of observation,—six months to two and a half years; in eighteen this function was not recovered.

Fifteen of these fifty-six cases were complicated with stone; excluding these,—since it might be objected that the cure resulted rather from the calculus extraction than from the prostatic operation,—there remain forty-one cases of uncomplicated prostate operation; of these, thirty-two (four-fifths) recovered the power of urination, in nine this ability was not recovered.

TURPENTINE INHALATIONS IN DIABETES.

The observation of Bremond, that in anæmic individuals, under the influence of repeated inhalations of turpentine, there was marked increase in the amount of hæmoglobin and a considerable increase in the reducing power of the oxyhæmoglobin, suggested to Dr. G. Bufalini the advisability of testing as to whether the favorable action of inhalations of turpentine in broncho-pneumonia, even when of a tubercular character, was not only attributable to the disinfecting power of terpine ($C_{10}H_6$) and its power of reducing secretion, but might not also in part be attributable to its influence on general nutrition, especially as concerned blood-making through the ozone of the turpentine. With this object in view, he estimated the excretion of sugar and urea, during the inhalation of turpentine for twenty-four hours, in two diabetics in whom the tissue-changes had been for several previous days accurately estimated. The specimens of turpentine which he employed were especially rich in ozone, the presence of which was determined by the tincture of guaiacum test. In neither of these cases, however, was there the slightest influence on the amount of urea excreted or in the oxidation of the sugar, even although the sugar was found to be capable of oxidation by the use of arsenic. The administration of 2 to 12 drops of Fowler's solution for ten days served to reduce the sugar more than fifty per cent.—*Centralblatt für Klinische Medicin*, No. 39, 1890.

THE CURABILITY OF CANCEROUS TUMORS BY INTERSTITIAL INJECTIONS OF BICHLORIDE OF MERCURY.

According to the Paris correspondent of the *Medical Press and Circular* for September 17, 1890, Professor Poucel, surgeon to the Marseilles Hospital, suggested, in 1884, that, in order to explain the production of cancer, it would be found at no distant date that the microbe of cancer would be discovered by the microscope. Since then efforts were made to prove the parasitic origin of the disease, and some pretended to have discovered the new microbe, but soon afterwards the pathogenic value of the bacilli, and it was even said that the micro-organism was not necessary to explain the clinical phenomena of cancer. Assuredly the transport of living cancerous cells by the veins, and above all by the lymphatics, would produce homologous tumors wherever those cells could find favorable conditions for germination. This mechanism, although explaining the generalization of the tumor, does not clear up its cause. The bacilli of cancer, as in the case of tubercles, exacts certain conditions which are transmissible in an hereditary sense, and which constitute the predisposition and the tendency. When these exist, the rapid growth of these micro-organisms becomes possible, and through their contact the epitheliums become inflamed, proliferous, and deformed, characterizing cancer. It was with this idea that he undertook a series of researches at the hospital of Marseilles. He had shortly before obtained a prompt cure of a malign pustule of a very bad form by injections of corrosive sublimate around its base, and these injections proved to him, first, that the bichloride had no ill effect on the tissues; and, secondly, that it was efficacious against microbes absorbed through the lymphatics. It appeared to him, then, that it was quite rational to

apply this treatment to cancer, or at least to tumors of a cancerous aspect of which the microbe (if there be one) is transmitted by the same means. Seven patients have already been submitted to this treatment, of whom the details are here given. The first was a woman without any syphilitic antecedents, whom he had treated for a long time with iodide of potassium. In the month of February last she entered the hospital for an ulcerated cancer of the right breast, which commenced ten months previously. The tumor was hard, uneven, and occupied all the mammary gland; the nipple was retracted, and the ulceration occupied the under part, giving exit to a fetid and abundant discharge. The axillary glands were as yet untouched, the tumor was free, and the general condition of the patient good. On the same day of her entry six injections (the half of an ordinary subcutaneous syringe each time) of a solution of bichloride of mercury (1 in 1000) were made into the most indurated points. No salivation followed, but the breast became a little inflamed. A month subsequently the woman returned, when it was found that the tumor had diminished in volume, and another series of injections were made, which were renewed four days subsequently. The decrease of the tumor was much more marked, and the fetid discharge had ceased. Unfortunately, a few days afterwards, the patient was carried off by an attack of angina pectoris, to which she had been for several years subject. Two other patients were treated without success, but both of whom were very advanced in age, one of them being 81. The fourth patient was a retired officer. M. Poucel was called to him for a large phlegmon in the groin. After incision, a hard ganglion, of the size of a nut, was discovered, and as the man had had some dozen of years previously an indurated chancre, he was ordered pills of proto-iodide of mercury. The tumor increased, in spite of this, rapidly, and soon attained the size of a large goose-egg. The son of the patient, a navy surgeon, was called in in consultation, and the cancerous nature of the affection was fully recognized. The first treatment was replaced by injection of the sublimate solution, a series of six every two days. At the end of three weeks all trace of the tumor had disappeared, and no return had taken place up to the present. Curious to say, the son had noticed in his own groin two small ganglions, which had dated three years back. However, about a year ago they became much more enlarged and harder, in spite of every possible treatment. Struck with the result of the injection in his father's case, he tried them on himself, and for that purpose injected four half-syringefuls daily. At the end of a week these glands disappeared. A sixth case was that of a man, who said that he had something wrong with his rectum, as he had often remarked a fetid bloody discharge from the anus. Examination revealed the existence of a malignant tumor. Four injections were made daily, and in twenty days the cancer had *vanished!* The seventh and last case was that of a woman, aged 58. She was very emaciated, and presented in the left breast a hardened nodulated tumor about the size of a large walnut. There was no retraction of the nipple nor any affection of the ganglions. Two injections were made, and renewed eight days subsequently. Three months afterwards, Dr. Poucel revisited the patient, when no trace of the tumor could be found. Four more patients are at present undergoing the treatment, and a notable progress is marked in each of them. In concluding, the author says that he does not pretend that the real treatment of cancer has been found, but what he can affirm is that certain tumors of a *cancerous appearance* are susceptible of being removed by the injections in question, and the chances, as may be conceived, are much greater when practised at the commencement. He used the words *cancerous appearance* advisedly, as in some subjects tainted with hereditary syphilis tumors resembling cancer are observed. However, in these cases iodide of potassium is the specific, whereas it has no effect on the true cancer. Several of his patients were treated, as stated above, by that drug without result. Therefore, it may be regarded as almost certain that all the cases mentioned were real cancers.

THE MECHANICAL TREATMENT OF CHRONIC DYSPEPSIA.

DR. CSÉRI, of Buda Pesth, publishes in the *Wiener Medicinische Wochenschrift* an account of a mechanical plan of treatment of chronic dyspepsia, which he has lately been carrying out with favorable results. The plan consists mainly in suitable dieting and in a peculiar kind of massage. The author practises the latter when the stomach is full, about two or three hours after dinner. Changing frequently his mode of proceeding,

he strokes and kneads the stomach from the fundus towards the pylorus, first gently and superficially, then more energetically, for ten or fifteen minutes, the patient lying on his back with his legs drawn up and breathing with his mouth open. During the last few minutes the massage is extended to the bowels. The manipulation is neither painful nor disagreeable, but is very well borne. The patients experience after the massage a feeling of warmth and comfort; occasionally they feel sleepy, but the fulness and feeling of weight have generally disappeared. After a few days they are in better spirits, all fear of coming cardialgia being entirely banished from their minds. The immediate result of this kind of massage is, that the stomach is freed from the many gases which are continually being generated there, and this alone produces a great feeling of relief. The hour for the massage is chosen because it is the time when part of the already chymified ingesta begins to enter the duodenum from the healthy stomach. In dyspepsia the stomach is generally sluggish, and either the quantity or quality of its secretion is impaired, and consequently chymification or peristaltic motion, or both, are insufficient. It is also known that mechanical stimulation of the stomach may increase its secretion, and the author considers himself justified in concluding that massage increases in this way the process of digestion. He also finds that at the same time, either through neuromuscular or true pathological change, muscular power increases, and the massage, no doubt in a purely mechanical way, helps to advance the stomachic contents into the duodenum. The rapid cure of pains and general malaise after eating in cases of nervous dyspepsia is explained by the fact that the manipulation dilates the pylorus, so that after a few days it offers no impediment to the food passing through it.—*Lancet*, September 20, 1890.

PICROTOXIN AND ITS USES.

In view of the fact that picrotoxin has been recommended for admission to the forthcoming addendum to the British Pharmacopœia, DR. WILLIAM MURREL contributes the following notes to the *Lancet*, September 20, 1890, concerning this useful but neglected remedy:

Although isolated by Boullay as far back as 1812,—six years before the discovery of strychnine,—it has of late failed to maintain its position as a therapeutic agent. It is officinal in the United States and in the French Pharmacopœias, but not in the others. As it is not an alkaloid, it will presumably be introduced into the British Pharmacopœia under the name of picrotoxinum, in accordance with the system of nomenclature adopted in the case of other neutral principles, such as elaterinum, santoninum, and salicinum. It will probably be defined as a neutral principle prepared from the seeds of anamirta paniculata, the cocculus indicus plant. It has been found that cocculus Plukenetii and cocculus lacunosus contain the same principle, but it is hardly likely that they will be recognized as official sources. Whether the cocculus indicus seeds themselves—the old coccole di Levante—will be introduced into the Pharmacopœia remains to be seen.

It is somewhat doubtful whether picrotoxin is or is not a simple body. Barth and Kretschy assert that it is a mixture of three different substances, which they name "picrotoxin" (a bitter, poisonous principle), "picrotin" (a bitter, non-poisonous principle), and "anamirtin." Paternò and Oglialoro question the correctness of these statements, and assert that "picrotoxin" and "picrotin" are mere decomposition products. They object strenuously to the new use of the term "picrotoxin," and rename the picrotoxin of Barth and Kretschy "picrotoxinin," to distinguish it from the true picrotoxin contained naturally in cocculus indicus. They also take objection to the "picrotin," which they believe to be identical with a substance named by them "hydrate of picrotoxide." As to anamirtin, they simply deny its existence in pure picrotoxin, and state that it is never found when the drug is purified by repeated crystallization. Schmidt and Löwenhardt confirm the observations of Paternò and Oglialoro, but they have somewhat complicated matters by discovering a new active principle, which they provisionally name "cocculin." Their opponents, however, are disinclined to admit the validity of their claims, and assert that cocculin is only anamirtin under another name. Whether picrotoxin is or is not a simple substance is a matter of very little importance from a purely pharmacopœial point of view, for it is well known that digitalin, which was at one time officinal, was composed of quite a collection of neutral principles. Moreover, atropine, like the other mydriatic alkaloids, is not a simple body, but can be resolved into tropine and tropic acid.

Picrotoxin has well-marked physical characteristics, and is usually met with in the form of colorless, feathery crystals, having an intensely bitter taste. It is soluble in water, in the proportion of 1 in 240, at a temperature of 60° F., but the solution is not stable, for, when the temperature falls below 40°, nearly half of it crystallizes out. It is much more readily soluble in a mixture of acetic acid and water, and it is to be hoped that a liquor picrotoxini made with acetic acid will be rendered officinal. Picrotoxin does not form salts, and it is the picrotoxin itself which is employed.

Fortunately, the pharmacological action of picrotoxin has been thoroughly worked out, and we deal with a substance having a very definite physiological action. The peculiar convulsions produced by it in the lower animals were accurately described by Glover more than forty years ago. They differ essentially from the tetanic condition caused by strychnine, and are due to stimulation of the motor-centres in the cerebrum, or in the medulla and cord.

It is a curious fact that most of our writers on therapeutics are silent on the subject of picrotoxin. Wood, for example, does not mention it, and Ringer refers to it only incidentally. Bartholow gives a good summary of its uses, but the most exhaustive account is to be found in Phillips's well-known "Vegetable Kingdom." Planat and Hammond recommended it in epilepsy, and Gubler proposed its use in chorea. Phillips lays down definite rules for its employment in various complaints, notably in certain forms of dyspepsia, megrim, and dysmenorrhœa. Externally, it is used in the form of a pigment or paint as a parasiticide. Dr. Murrel has employed it largely in doses of $\frac{1}{60}$ grain in the treatment of the night-sweating of phthisis, for which it is an excellent remedy. It probably acts as an anidrotic by simulating the respiratory centre.

There seems to be some difference of opinion as to the dose. In a well-known dictionary of medicine it was stated to be $\frac{1}{6}$ grain, but this was subsequently corrected, and was obviously a misprint. The correct dose is from $\frac{1}{120}$ to $\frac{1}{60}$ grain. In the Pharmacopœia of the Westminster Hospital there is a pill containing $\frac{1}{120}$ grain, made with sugar of milk and glycerin of tragacanth, and the author never gives more than two of these three times a day. Crichton Browne finds that in rabbits the toxic dose is $\frac{1}{60}$ grain to the pound of body-weight, and in guinea-pigs about $\frac{1}{40}$ grain to the pound.

There are very few cases of poisoning on record. Many years ago several men suffered severely from drinking rum impregnated with cocculus indicus, and in another case a boy of 12 died from swallowing forty grains of a fish-poison containing cocculus indicus, but the strength of the preparation was not known. There might possibly be some difficulty in detecting with certainty the presence of picrotoxin in the dead body, for Giaconelli has described a ptomaïne closely resembling it both in physical characters and chemical reactions. The pharmacological actions would probably serve to differentiate them. Picrotoxin is allied to cicutoxin, the active principle of the water-hemlock, and to coriamyrtin, derived from *Coriaria myrtifolia*. These drugs stimulate the origins of the inhibitory fibres of the vagus, the vascular and respiratory centres, and the motor areas of the medulla oblongata. In its action on the secretions, picrotoxin is allied to pilocarpine and muscarine, and is antagonized by atropine and members of that group. The best antidote to picrotoxin is chloral hydrate.

DIURETIC ACTION OF THEOBROMINE AND DIURETIN.

Theobromine was first extracted by Wokressenski, in 1842, from cacao-seeds (*Theobroma cacao*). It was first employed in therapeutics by Boutigny, who attributed a tonic action to it. In the last few years, on account of the analogy between its composition and caffeine, a number of experiments have been made, principally by Gram, Schroeder, and Sée, with the idea of determining its physiological action.

Theobromine is a feeble alkaline base, with a slightly bitter taste, which does not undergo change in the air, even at the boiling-point. At 250° C. it commences to color brown, and undergoes sublimation at a few degrees higher temperature. Theobromine is scarcely soluble in boiling water, and less soluble in alcohol and ether. It combines with alkalies and sodium. Theobromine is obtained by solution of the base in caustic soda. It occurs then in the form of white deliquescent crystals, which are destroyed by carbonic acid. Its solution forms white precipitates by solutions of lead, zinc, and mercury. An ammoniacal solution of theobromine, after prolonged boiling with nitrate of silver, gives a granular and alkaline combination of theobromine and silver. If this combination of theo-

bromine and silver is treated with iodide of methyl, it can be transformed into the alkaloid caffeine, a fact which shows that theobromine is a lower homologue of caffeine.

Under the name of diuretin is designated a combination of theobromine with soda and salicylic acid, a combination which, according to Vulpius, possesses a pure diuretic action, without any action on the central nervous system, its diuretic property depending exclusively on the amount of theobromine present. Diuretin is thus, according to these authorities, a double salt, composed of sodium, theobromine, and salicylate of sodium. In the *Bulletin Général de Thérapeutique*, No. 30, 1890, DR. KOUINDJY-POMERANTZ publishes an elaborate essay as to the diuretic action of diuretin and theobromine from experiments made under the direction of Dujardin-Beaumetz in the laboratory of Therapeutics in the Cochin Hospital.

These experiments show that diuretin should not be employed hypodermically, as the author has found that even when the most careful observance of antisepsis is employed that local abscesses are almost invariably produced. The experiments also seem to show that diuretin is much less toxic than caffeine; for while caffeine, in the dose of about ⅞ to 1 grain, killed a guinea-pig within an hour, 5 grains of theobromine produced no serious result. In reference to the action of caffeine, the author concludes that the citrate of caffeine acts both as a purgative and diuretic, and that its diuretic action is dependent upon the increase of blood-pressure, and is, therefore, contraindicated when arterial pressure is exaggerated. Caffeine reduces the contractions of the heart, and although caffeine rapidly increases the quantity of urine eliminated, this diuresis is of but short duration, as the patient rapidly becomes habituated to the remedy.

Finally, caffeine produces difficulty in urination, the act being accompanied by burning sensation in the urethra. The author believes that, as a diuretic, diuretin is preferable to caffeine, upon the following grounds:

1. Diuretin, in the dose of 45 to 75 grains, given in 15-grain doses every two or three hours, is an active diuretic, the action being much more marked than that of caffeine.

2. Diuretin acts directly on the renal epithelium, although the author states that there should be some hesitation in its employment in patients affected with considerable organic degeneration of the heart.

3. Under the influence of diuretin there is no change in the number of contractions of the heart.

4. Diuretin rapidly increases the quantity of urine produced, and the diuresis so produced lasts three or four times as long as that which follows the use of caffeine.

5. The patient does not become habituated to it.

6. The burning sensation which follows the use of caffeine is absent.

7. If diuretin is given in the dose of 45 grains a day it has no action on the nervous system. It should be given in milk or chocolate before eating. Theobromine and diuretin are said to produce good effects in cases of dropsy, provided the kidneys are not diseased, in which case no action is to be expected.

THE GALVANO-CAUTERY IN PURULENT OPHTHALMIA.

According to the Paris correspondent of the *Lancet* for September 20, 1890, purulent ophthalmia, when seen sufficiently early and before any ulceration of the cornea has had time to develop, will generally give way before the usual lotions and mild cauterization with nitrate of silver. The outlook may, however, be different when these cases are seen late, and when more or less extensive ulceration of the cornea has been set up; for their vision may be seriously threatened, if even the organ should escape total destruction. It is in such cases as these that M. Abadie has reaped admirable results from the use of the galvano-cautery. For instance, a lad of 20 came among the out-patients with his eyes in a lamentable condition, the result of gonorrhœal contagion. There was a history of three weeks' duration of this state of things. Both corneæ were extensively ulcerated, and so deeply that the anterior chambers were invaded, while even the iris had not escaped, but was infiltrated, and had the appearance of being covered with a grayish membrane. The conjunctivæ and eyelids generally were so involved that it was with difficulty the latter could be everted. The case being considered desperate, it was deemed useless to pursue the routine treatment. Rapid arrest of the destructive process was attempted by means of the galvano-cautery, which was freely applied to the suppurating surfaces, while the milder cauterization by silver nitrate was repeated twice daily. Eserine drops, as well as iodoform

insufflations, were from time to time had recourse to, while boric acid lotions were frequently applied. This was the sum of the treatment which was vigorously kept going for five consecutive days. At the end of this time quite a transformation was effected. The eyelids could be opened freely, the sclerotic was assuming a normal aspect, while the corneal defect was being rapidly repaired and the anterior chamber closed in. Then, after three months of further application of spray douches, the two corneæ had become so far transparent that a double iridectomy was undertaken after recovery, from which the patient was able to read average print, and has since resumed his occupation of stonemason. Another case was that of a man 58 years of age, who contracted a purulent ophthalmia, which owned a similar cause to the foregoing, but who presented himself the third day afterwards for advice. He was ordered the silver nitrate treatment for eight days, at the end of which time his eyes appeared out of danger. Milder lotions were substituted, but the patient, feeling himself, as he thought, altogether cured, was remiss in his attention to instructions, with the result that the whole mischief was rekindled, if anything more intensely than before, for the discharge became very abundant. This time, however, the application of silver nitrate was powerless to prevent the development of an extensive corneal ulceration, which progressed with such rapidity that the urgency for more energetic measures was evident if the cornea was to be saved from destruction. The galvano-cautery was, therefore, applied for four days in succession, while the nitrate of silver and iodoform applications were kept up as in the previous case. Eserine was not used, as the anterior chamber was not here involved. In six days the ulceration was no longer visible. The patient is still under observation and the douche treatment. The cornea, which was saved from perforation, is opaque at the borders, but the centre is perfectly transparent, and vision is relatively good. The advantages of the galvano-cautery have already been shown in the treatment of perforating ulcers with hypopyon. The method of Sæmisch may be with advantage replaced by the cauterization of the ulcerated surface by penetrating with the galvano-cautery through the centre of the ulcer to the anterior chamber, and thereby readily liberating the hypopyon. In conclusion, it is claimed for the galvano-cautery, combined with the application of a two or three per cent. solution of silver nitrate, that it is quite possible to cure all forms of purulent ophthalmia, whatever may be their gravity, and that even in cases where the cornea may be seriously involved, and where, under older views and methods, it would be deemed as irrevocably lost.

USE OF CONDURANGO AND CONDURANGIN.

In an exhaustive study, emanating from the laboratory of Therapeutics of the Cochin Hospital, Dr. Guyenot is lead to the following conclusions (*Bulletin Général de Thérapeutique*, No. 32, 1890):

1. Condurango employed in the form of a powder appears to be remarkably efficacious in painful affections of the stomach, and especially in the case of gastric ulcer and irritation of the gastric mucous membrane.

2. Cases of cancer of the stomach, which have been claimed to be cured as the result of treatment with condurango, are certainly to be regarded as errors in diagnosis. In all probability the majority of them were cases of ulcerative gastritis.

3. Condurangin possesses an extremely curious and interesting action. It causes a veritable locomotor ataxia, which is due, without doubt, in view of its late appearance, to the formation of some toxic substance produced by the splitting up of condurangin in the organism.

4. In view of the fact that the chemical nature of condurangin is not yet thoroughly established, and its physiological action not being thoroughly understood, the bark of condurango should be employed in therapeutics, and not condurangin.

ANTIPYRIN AND BROMIDE OF AMMONIUM IN EPILEPSY.

Almost countless drugs and combinations of drugs have been used in the treatment of epilepsy, with the result that the various bromides, either singly or combined, have so far given the best results in relieving this distressing disease.

It is well known, however, that the bromides, when used persistently in large doses, cause various very disagreeable symptoms; therefore something which will be equally efficacious in lessening the number of epileptic seizures, and, at the same time, not cause these symptoms, is a desideratum.

With this end in view, various drugs—as

antipyrin, antifebrin, and bromide of ammonium—were separately tried in the Clinic for Nervous Diseases, University Hospital, with but indifferent results, until September, 1888, when Dr. H. C. Wood suggested the use of antipyrin and bromide of ammonium in combination.

Since that time DR. CHARLES S. POTTS states in the *University Medical Magazine* for October, 1890, that this mixture has been used with excellent results in forty-three cases of idiopathic epilepsy. In none did it fail to cause marked amelioration of the symptoms, and in some it gave relief when all the other commonly-used remedies had failed, and in none were any indications of bromism present, or any of the other disagreeable symptoms which antipyrin sometimes gives rise to.

THE ACTION OF CATHA EDULIS.

This plant, largely cultivated in the south of Arabia, tropical Africa, and Abyssinia, seems to possess many properties in common with cocoa and maté, although as yet all attempts to determine the presence of caffeine or cocaine in its leaves have failed, and although an alkaloid named katine is claimed to have been found in it, Flückinger's statements to this effect have not yet been confirmed by other observers. After the ingestion of catha edulis leaves a sensation of warmth is experienced in the epigastrium. The leaves have an astringent taste, and are very rich in tannin. Catha edulis appears to possess the property of suppressing the sensation of hunger, without, however, being regarded as an aliment, and in this respect is analogous with opium, kola nut, and guarana. In the *Bulletin Général de Thérapeutique* for September 15, 1890, DR. LELOUP contributes a long botanical, historical, and experimental study of catha edulis, in which he relates the results of experiments made upon himself and upon a number of individuals affected with various complaints. He states that, after its use, he has seen a number of persons under the influence of catha edulis able to go three days and nights without sleep and without experiencing fatigue. After its use also he has seen several persons, of even a most advanced age, accomplish severe exertion without fatigue, while he refers to three other cases in which violent migraine was cured by the use of the tincture of catha edulis. The author's cases are, however, reported with so much indefiniteness, and the results in some cases are so contradictory,—thus, in one case, it enables an individual to remain awake three nights in succession; in another, cures a case of insomnia,—that we can attach very little value to his conclusions. There can be no doubt, however, but that the leaves of catha edulis must possess some principle which possesses marked stimulating properties. As yet, however, all attempts to isolate it appear to have failed, and no reliable work has yet appeared to our knowledge as to the action of this substance or as to the cases in which it is indicated as a remedy.

ARISTOL IN AFFECTIONS OF THE SKIN.

Although aristol has been before the profession but a comparatively short period of time, favorable results, which quite confirm those recorded by Eichhoff, have been reported. It is in the treatment of cutaneous diseases that aristol has been most largely used. Aristol is a new iodine derivative of thymol, and is made by the addition of a solution of iodine in iodide of potassium to a soda solution of thymol. It is inodorus, and supposed to be a non-toxic, antiseptic remedy. Aristol is of a yellowish-brown color, decomposing on exposure to light, and should be kept in opaque bottles. It is insoluble in water and alcohol, except in excess; it is also insoluble in glycerin; it is readily soluble in ether, chloroform, and the fatty oils. Olive oil is generally used when an oil is desired.

In the *Medical Record* for October 18, 1890, DR. D. F. KINNIER reports ten cases of various forms of cutaneous affections, in most of which this drug acted in a satisfactory manner. These cases comprise three of lupus, one of varicose ulcer, one of common psoriasis, one of tinea versicolor, one of erythema intertrigo, and three of venereal sores; in all of these the results are stated to have been satisfactory, with the exception of the latter, in which aristol in powder, solution, and ointment failed, and when iodoform was substituted the sores rapidly healed.

Aristol is useful in the treatment of ringworm, but there are more effective remedies. Good results were obtained by the use of aristol in cases of purulent otorrhœa with eczema auris. Brocq, who has had a large experience with aristol, recommends it highly as a topical application for ulcer of the leg, and, with absolute rest of the limb, considers the aristol treatment superior to the iodoform

treatment. Aristol in varicose ulcer of the leg brings about a more rapid cicatrix than iodoform. Aristol seems to have a special action in lupus, especially the ulcerating form, and is highly recommended by Brocq and Eichhoff, the latter claiming that it acts as a specific poison to the bacillus tuberculosis of lupus.

Whether aristol will replace iodoform in the treatment of skin-disease remains to be decided. Aristol has many points to commend its use over that of iodoform, one in particular being its freedom from odor.

Aristol being an iodine compound is supposed to produce toxic symptoms, especially if applied over a large surface. This doubt may be dispelled by an examination of the urine in cases where aristol has been used. Repeated examinations of the urine by Castani's method and the starch-paste test failed to give the iodine reaction. Both these tests are delicate and reliable, and iodine, if present in only a trace, will be detected in the urine. In psoriasis, aristol seemed to act well, but not so promptly as chrysarobin. There are many objections to the use of chrysarobin in the treatment of psoriasis which do not hold in the case of aristol, such as dermatitis, conjunctivitis, discoloration of the skin and clothing. Aristol is devoid of all the unpleasant symptoms and is worthy of a most careful trial in the treatment of psoriasis.

Dr. Brocq reports the case of a patient suffering from extensive superficial epithelioma of the face, which was almost entirely healed in three weeks by dusting with aristol. Aristol seems to act specially in bringing about cicatrization in obstinate ulcers, ulcerating lupus, and in superficial epithelioma. Cases of rhinitis, moist condylomata, specific ozæna, suppurating gummata, syphilis of the naso-pharynx have been reported where the use of aristol has been followed by good results.

Eichhoff suggests its use in local tuberculosis and constitutional syphilis by hypodermic administration.

THE PHYSIOLOGICAL ACTION OF COCAINE.

In the *Archiv für die Gesammte Physiologie* for October 1, vol. xlvii., Nos. 11 and 12, 1890, DR. UGOLINO MOSSO publishes a long experimental essay as to the physiological action of cocaine, of which the following represent his most important conclusions:

Cocaine paralyzes the motor nerves and acts on the ganglionic cells of the spinal cord, as is evidenced by the fact that, although the cord remains in physiological connection with all the sensory nerve-trunks and endings, in poisoning by cocaine the sensibility only remains intact in those parts whose sensory nerves are connected with a section of the cord which has been protected from the action of the cocaine.

Dr. Mosso shows that cocaine cannot be correctly termed a poison for the sensory system in the same way in which curare is for the motor nerves, since he shows that in the advanced stage of poisoning, wherever arrest of respiration occurs, the animals are certain to die, and the sensory nerves still retain their function.

When the irritability of the nerve-centres of the spinal cord is depressed by the local application of cold, all reflex movements attributable to irritation of the sensory nerves disappear, even although voluntary movements may persist. The action of cocaine, therefore, in this respect offers nothing characteristic, since we may obtain the same effect through the action of cold on the nervous system.

In studying the local action of cocaine on the nerve trunks, Dr. Mosso has found that when locally applied to mixed nerves cocaine prevents conductility of both the motor and sensory nerve-fibres.

When the great part of the spinal cord is protected from cocaine, sensibility disappears after motility, while centrifugal conductility of the cord is destroyed.

In doses of $\frac{1}{120}$ grain for every two pounds of body-weight of dog, cocaine exercises no influence on muscular contraction, while when given in doses of $\frac{1}{64}$ grain it acts as an irritant, and in doses of $\frac{1}{120}$ grain a paralysis results.

In studies made on the muscular system of man, Dr. Mosso has found that when 1½ grains of cocaine are administered by the stomach the muscles are able to accomplish a greater amount of work than in the normal condition. This result obtains solely when the cocaine is slowly absorbed by the gastric mucous membrane, for, if injected in large doses into the blood, cocaine first acts as an irritant and then as a paralyzant to the muscular system of man. On fatigued muscles the stimulating action is more marked than on muscles in the state of rest; while if given after a prolonged fast the stimulating action is still more marked, and the muscle, whose

power had fallen below the normal, is, under the influence of cocaine, then restored to above the normal degree.

Cocaine has been found by the author to increase the quantity of inspired air, from the fact that in small doses cocaine increases the chemical processes in the body; it, however, depresses these processes when given in larger quantities.

Cocaine in small doses produced marked contraction of the blood vessels in man, this result being determined by the author by plethysmographic studies made upon his own arm.

THE NATURE AND TREATMENT OF VERTIGO.

At the meeting of the Medical Society of Virginia, held September 2, 3, and 4, 1890, DR. LANDON CARTER GRAY read a paper on this subject (*New York Medical Record*, October 18, 1890). He said that an important generic distinction between vertigo of organic disease and that of a functional nature is that the former is attended by less irritability and apprehension on the part of the patient than the functional form. Kidney, heart, and organic liver troubles cause slight vertigo, lasting only a short time. In vertigo due to kidney-disease the headache sometimes disposes to hebetude or coma, occasionally convulsions; there may be œdema also. In vertigo of organic liver-disease there is usually some degree of hebetude, or jaundice, or dropsy. Vertigo due to brain lesions will prove pathognomonic. Thus cerebellar vertigo causes titubation, or one-sided staggering gait, or sudden semicircular whirling. According to Dana, temporal lobe lesions may produce like symptoms. Spinal lesions are not apt to cause more than slight vertigo; in locomotor ataxia dizziness may occur when the patient's eyes are closed. Middle-ear and labyrinthal diseases also cause vertigo.

But there is a chronic vertigo, varying from a sudden sensation of loss of equilibrium to dread of going about, often attended by symptoms of other nervous disturbance, such as tingling of extremities, fulness about head, usually felt most at the vertex, with slight aural ringing, mild insomnia, irritability, etc. It is most common in young and middle-aged adults, and is most frequent in northern climates in the first warm months of the year. In severe cases, even going from a cold into an overwarm room, will induce an attack. Neurasthenia is common. Tongue is usually unaffected, but there is generally an excess of uric acid or oxalate of lime in the urine. Hence Murchison gave to this symptom-group the name lithæmia. But Dr. Gray said many cases do not present evidence of liver-trouble; nor is there a standard by which to judge of an excess of uric acid in the system; and, again, cholagogues often aggravate the vertigo as well as nervous symptoms. He said that generally this peculiar form of vertigo is due to some chronic and persistent error of digestion,—either of the nitrogenized or starchy elements of food, or of both. Constipation, without coated tongue or foul breath, is common in this form of digestive disease. Predispositions to gout or rheumatism seem to cause such trouble; but the exciting causes of the vertigo are mental or physical overstrain, great anxiety, malaria, very sedentary life, etc.

Therapeutically, in those not having neurasthenia, he gives 20 drops of dilute nitro-muriatic acid, before meals, in a wineglass of water, and also 1 drachm of fluid extract, or 2 grains of solid extract of cascara sagrada three times daily, reducing the dose if it causes more than two feculent stools a day. Interdict all red meat diet. In about ten days the patient will feel better generally, but the vertigo will still be unaltered. Then stop the acid, and instead give the best pepsin and pancreatin,—pepsin immediately after meals, and pancreatin an hour and a half later. After a time gradually return to meat diet, but only once a day. In neurasthenic cases, in addition to this treatment, require the patient to take absolute rest—even sometimes in bed—for two or three weeks. It is better to err on the side of enforcing too much than too little rest in these cases. In so radically differing from others with reference to the treatment of this chronic form of vertigo, he has only to say that his experience has taught him to so differ.

In the discussion which followed, DR. WILLIAM W. PARKER agreed with Dr. Gray that the cause of the vertigo was mostly of a dyspeptic character, and hence a very rigid diet is the essential element of treatment.

DR. HUNTER MCGUIRE said that after a great deal of study of cases of vertigo of the chronic kind, so well described by Dr. Gray, he had come to the conclusion that they were typical of a form of lithæmia, and that they originated in some derangement of the portal circulation. He had noticed that if the liver keeps on acting well,—to use the common form of expression,—the vertigo does not

occur. Such inaction of the liver in these cases is not always manifested by the characteristic furred tongue, etc., for that may be red and moist, while the fæcal discharges may show a grayish or putty look. But there is always evidence of some form of gastric or bowel fermentation. He has derived benefit from a somewhat continuous use of cholagogue purgatives, so as to get two or three feculent actions a day, and then by the prolonged use of minute doses of bichloride of mercury short of ptyalism. He keeps it up, in doses of from $\frac{1}{64}$ to $\frac{1}{16}$ grain, three times daily, for a period of a month or more. Then he gives a perfectly neutral solution of *ex tempore* prescription of the hypophosphites of lime and soda. He is afraid to depend upon any of the prepared syrups of the hypophosphites on the market in such cases.

Dr. Isaiah H. White said that he was satisfied that the form of vertigo described is an expression of lithæmia, or else that it is due to some of the other products of waste which are not properly eliminated from the system. It is possibly due to the development of ptomaïnes.

Dr. Hugh Blair, of Richmond, Va., stated that he had long since come to the conclusion that the form of vertigo described is due mostly to lithæmia, and that lithæmia is but another expression for gout, and that it is all due to disordered fermentative digestion, due to the imperfect liver action.

ANTAGONISM BETWEEN THE MANNERS IN WHICH IODINE AND SALICYLATE PREPARATIONS ARE ABSORBED BY THE ARTICULATIONS, EXUDATIONS, AND TRANSUDATIONS.

Starting with the idea that the pharmacological activity of any substance has a direct relationship with the affinity of that body for certain definite forms of organic protoplasm, Rosenbach and Pohl have endeavored to determine what parts of the organism attract substances which are ordinarily designated as specifics, and which are known to pass very rapidly into the blood, no matter what may be their mode of administration. Iodide of potassium and salicylic acid were first investigated by these authors, and the results of their studies are published in the *Gazette Médicale de Paris*, October 11, 1890. The object of their research in this connection was to determine if these two substances, administered in the ordinary manner, passed or not into the principal serous cavities, articulations, pleura, or peritoneum.

The record of their experiments will best furnish a means of comprehending how their studies were conducted. Seventy-five grains of salicylate of sodium were given to a phthisical patient, who happened to be in an intensely febrile condition only a short time before death. At the autopsy the articulation of the knee was opened, and one drop of a solution of perchloride of iron dropped into it. This reagent caused the appearance of a pale violet tint in the synovia and synovial membrane. In order to still better determine the presence of salicylic acid in the joint, the other articulation of the other knee was likewise opened, and the synovial fluid carefully collected, boiled, and then a little hydrochloric acid added. After cooling, the decoction was shaken up with ether, the ether allowed to evaporate in the test-tube, and the residue dissolved in water, to which was added a few drops of a very dilute solution of perchloride of iron. A marked violet tint was immediately produced, showing the presence of salicylic acid.

Rosenbach and Pohl conclude from their studies—

1. That salicylated solutions are not only eliminated by the urine, but pass into the articular cavities, peritoneum, and pleura, as well when these cavities are in a normal state as when they are the seat of an exudation; consequently they are to be found almost invariably in simple transudations and also, though in less quantity, when the exudations are purulent. In this respect there is no difference in peritoneal or pleural exudations. But, on the other hand, it is impossible to find the salicylate of sodium in the saliva, in the gastric juice, in the intestine juice, or in the bile.

2. Iodated preparations administered by the mouth or subcutaneously pass into the urine and into the saliva; as is the case with the salicylated preparations, they are also to be found in liquids transudated under the skin, into the abdominal cavity or into the pleura, and this holds in affections of the most varied nature.

On the other hand, no traces of preparations of iodine are ever to be found in serous or purulent exudations. Thus, the presence of iodine has never been detected in the articular exudations, either in healthy subjects or in subjects of disease, even after the admin-

istration of large doses of different preparations of iodine.

3. Salicylate of sodium injected into an articular cavity, whether the seat of a liquid transudation or a purulent or serous exudation may be invariably detected in the urine.

4. When iodide of potassium is given in the same manner, the presence of iodine may be detected in a few moments in the saliva and in the urine, whether the articular cavities have been the seat of a serous or inflammatory exudation, or whether they are occupied simply by a transudation.

5. There thus exists between iodine and salicylate of sodium a fundamental difference, in that the second medicament, whatever be its method of administration, whether by mouth or by rectum, subcutaneously or directly into a serous cavity, is transferred in all directions by the liquids of the organism, especially into the serous cavities and in the urine, while iodine administered by the mouth passes into the urine and saliva, and never into the articular cavities, whether these are in a normal state or not, and never into the inflammatory exudation of serous cavities, such as the pleura and perineum.

The authors conclude from these facts,—

a. That the iodide preparations are completely inefficacious in cases of acute articular rheumatism, as well as in cases of serous or purulent inflammations of the pleura or peritoneum; for they never are carried to the seat of the morbid processes.

b. The salicylated preparations, on the other hand, deserve to be more employed in cases of articular rheumatism and in cases of serous pleurisy, since it has been established that a considerable quantity of these substances passes into the pleural cavity. It is evident, however, that in view of the volume of this large cavity large doses of the remedy are required, or it should be administered immediately after the puncture before renewed secretion takes place. It also would appear that the direct injection of the remedy after puncture possesses certain advantages. The authors attribute the favorable and rapid results obtained in a series of cases of exudative pleurisy of moderate severity to the association of thoracentesis and salicylated medication.

Finally, in doubtful cases the potassium iodide may be utilized to decide the question as to whether any given case is a simple product of transudation or inflammatory exudation. The experiments of the authors show that in the first case after the administration of iodine by the mouth the iodine may be found in the transudated liquid, but not in the inflammatory exudation.

EPSOM SALTS IN THE TREATMENT OF ACUTE DYSENTERY.

In the *Lancet*, October 4, 1890, DR. A. W. LEAHY writes that for quite a while he has been in the habit of using sulphate of magnesia as a remedy in cases of acute dysentery, and has been much impressed with the successful results which have attended its use.

The classical remedy for years past that has been almost universally prescribed in treating acute dysentery is, as is well known, powdered ipecacuanha. In India the treatment of dysentery by large doses of ipecacuanha is looked upon as the only certain and reliable method of treatment. It is claimed to possess all the benefits ascribed to blood-letting, without robbing the system of one drop of blood; all the advantages of mercurial and other purgatives without their irritating action, all the good results of antimonials and sudorifics without any of their uncertainty; all the euthanasia ascribed to opium without making, if not aggravating, the disease, while the mischief is silently accumulating within. Thus, it is claimed, we possess in ipecacuanha a non-spoliative antiphlogistic, a certain cholagogue and unirritating purgative, a powerful sudorific, and a harmless sedative to the heart and the muscular fibres of the intestines. While Dr. Leahy admits that ipecacuanha in the treatment of acute dysentery possesses many of these attributes and properties, there are, nevertheless, many objections which may be urged against the use of large doses of ipecacuanha in dysentery. The first is its depressing influence, kept up by nausea and vomiting; the second, it is liable to set up uncontrollable vomiting. These objections certainly are very serious ones, and, as they are in all probability of frequent occurrence, they must detract considerably from the value of this mode of treatment. The depressing influence of the drug when given in large doses is frequently seen, as is also the case where its administration is followed by violent and persistent vomiting, even to the extent of causing depression to an alarming extent. Further, when the vomiting occurs, it follows closely upon the swallowing of the drug, which, being thus ejected, is prevented from exercising its valuable effects on the diseased mucous membrane of the intestine;

while the patient's vital powers are depressed by the violent retching and vomiting, without any good impression being made upon the disease itself. Acute dysentery is in itself a disease accompanied by considerable nervous depression, and any remedy that tends to in any way increase this depression is objectionable. After observing a number of cases in which these unfavorable results were accentuated, Dr. Leahy writes that he commenced treating cases of acute dysentery with a saturated solution of Epsom salts. His attention was first called to the value of this drug in dysentery by Dr. Anderson, who called his attention to the statement of Bartholow that "the most efficient treatment of acute dysentery is by the administration of sulphate of magnesium. It is especially adapted to the acute stage, where there are fever, pain, tenesmus, and stools of mucus and blood. It lessens the hyperæmia and causes fæcal evacuations, with the result of relieving the pain and the distressing straining."

Dr. Leahy publishes a table of ninety-five cases treated in Hyderabad, all of them apparently being marked cases of dysentery. All the cases occurred among the poorer class of patients who seek relief at hospitals, and the vitality of many of them was at an exceedingly low ebb when they came under treatment. Out of the ninety-five, three died; two out of these three cases were stated to have been, at the time of their admission into the hospital, in a moribund condition.

It appears from his table that, on an average, two days' treatment with Epsom salts is required to produce disappearance of the dysenteric symptoms. The treatment subsequent to the production of this condition consists of an astringent mixture with opium. His method of administration is to take a sufficient quantity of sulphate of magnesium to saturate seven fluidounces of water, and to this saturated solution add one ounce of diluted sulphuric acid. The dose of this is a tablespoonful every hour or two in a wineglassful of water until it operates. Sulphate of morphine may be combined with it, or starch enemata with laudanum may be employed.

Dr. Leahy claims that in the earlier stages of dysentery this saturated solution of Epsom salts acts like a charm; fever, if present, disappears; mucus and blood are wanting in the stools, which become copious, feculent, and bilious; the tenesmus ceases; the patient's anxiety diminishes; the skin acts well, and sleep follows the administration of the first few doses. It is especially in the acute cases that sulphate of magnesium is so valuable; the more chronic the case becomes the less apparent are the advantages of this method of treatment. Dr. Leahy has ordinarily given a drachm of this saturated solution with ten drops of dilute sulphuric acid every hour or two until its effects became evidenced in the feculent character of the stools and their freedom from blood and mucus, or until the temperature has fallen, and the pain and tenesmus have ceased. When the stools have become normal in color and appearance, and the patient only passes two or three in the twenty-four hours, an ordinary astringent mixture of acid with laudanum or tincture of Indian hemp, or a pill containing extract of opium, is usually all that is necessary to complete the cure. It is, of course, imperative to diet the case with great care.

Dr. Leahy sums up the results of this treatment, as compared with that of ipecacuanha, as follows:

1. It has no depressing action on the system.
2. It neither produces nausea nor vomiting.
3. It quiets and soothes the patient.
4. Its physiological action on the mucous membrane of the intestines in relieving hyperæmia is sound, and by this means it probably prevents the formation of ulcers within the gut, places those which have already formed into a condition most favorable for their healing, preventing the acute inflammatory process and engorgement of the mucous membrane leading to the death of more tissue, and this bringing about a cure.

THE PHYSIOLOGICAL PROPERTIES OF HYPNAL.

In the *Bulletin Général de Thérapeutique*, September 30, 1890, Dr. Frankel publishes an elaborate experimental essay as to the physiological properties of hypnal, or monochloralantipyrin, from studies made in the Laboratory of Therapeutics of the Cochin Hospital. The following represents the author's conclusions:

1. Hypnal, or monochloralantipyrin, is chemically a perfectly definite compound. It is, however, less soluble than its components chloral and antipyrin, the latter separating when the product is placed in contact with a feeble alkali, and therefore occurs when this compound is introduced into the blood or intestine.

2. Hypnal has scarcely any taste, has no odor, and in this respect possesses considerable superiority over chloral, as rendering it much easier of administration, especially to children.

3. The properties of its components—chloral and antipyrin—are combined in this substance, and it is, therefore, a remedy which is both hypnotic and analgesic.

4. The chemical combination of chloral and antipyrin results in an increase of the hypnotic properties of the chloral by the addition of the influence of antipyrin on the nervous system.

5. Hypnal produces narcotic effects in doses of one-third less than is required of chloral.

6. Hypnal may be of great service in insomnia caused by pain.

THERAPEUTIC VALUE OF SULPHATE OF CINCHONIDINE.

Dr. de Brun, physician to the French Hospital at Beyrouth, has published (*Revue de Médecine*, September, 1890) the results of a large series of observations on the treatment of malarial affections with sulphate of cinchonidine. He was induced to give it a trial from considerations of economy, as its price is only about one-sixth that of quinine, the comparatively high price of which was a serious drain on the resources of the hospital. 1. In simple intermittent fevers of the tertian or quartan type he found it quite as efficacious as sulphate of quinine. Seventeen cases are reported, and in eleven of these the fever was cut short on the first day, in three on the second day, and in three on the third day. The temperature fell from the first, while the headache, sweating, rigors, insomnia, and other well-known symptoms were also much ameliorated. The doses and method of administration are the same as with quinine. 2. In chronic malarial poisoning, with enlargement of the liver and spleen, and in cases of remittent fever, cinchonidine was found to act quite as rapidly and efficaciously as quinine. The patients, as a rule, entered the hospital profoundly cachectic and anæmic to the last degree, with the typical appearance of persons suffering from malarial poisoning. The microscopic changes in the blood were also well marked. In a few days their whole condition improved steadily and regularly, appetite and energy returned, the face and mucous membranes lost their pallid tint, and the heart-murmurs disappeared. After one week of treatment many were so much improved that they refused to remain longer in hospital, the average stay being only twelve days. In one case with very profound anæmia the red corpuscles were only 1,780,000 per cubic millimetre of blood; six days later they numbered 2,480,000, and in sixteen days 3,560,000. At the same time the breaking down of the blood-corpuscles ceased. In three cases in which albuminuria was present it disappeared without special treatment. The other complications of malaria often met with were benefited in an equal degree. In those cases where the enlargement of the liver and spleen was due to simple congestion these organs regained their normal dimensions, but in others where interstitial changes and fibrous thickening had occurred an improvement only was observed. Twenty-three cases are reported, with full details. 3. In malarial neuralgia, and also in neuralgias supposed to be non-malarial, cinchonidine was found to be efficacious. 4. In certain cases where sulphate of quinine had failed, cinchonidine effected a speedy cure. Eleven cases are given in detail. After cessation of active treatment with cinchonidine, the patients remain for a long time in good health; they are also, in Dr. de Brun's opinion, more capable of resisting fresh malarial poisoning than after a similar course of quinine. He is also of opinion that cinchonidine should not be regarded merely as a substitute for quinine, but as a remedy having a distinct value of its own and superior in the treatment of certain cases to sulphate of quinine.—*British Medical Journal*, October 11, 1890.

THE ACTION OF CAFFEINE, MORPHINE, ATROPINE, ERGOTIN, AND DIGITALIS ON ARTERIAL PRESSURE.

Dr. Sophie Frenkel has conducted a series of clinical researches with the above remedies by means of the sphygmograph of Basch, and her results, which are about as follows, are published in the *Gazette Médicale de Paris* for October 11, 1890:

Caffeine administered by the mouth, in a daily dose of from 7½ to 12 grains, in cases affected with circulatory troubles, is apt to produce increase of arterial pressure and to accomplish therapeutic effects comparable to those of digitalis. The elevation of arterial pressure produced by caffeine is, as a rule, slight. It reaches its maximum intensity on

the second or third day, retains its height for one or two days, and then gradually declines, even in spite of the continuance of the remedy. The diuretic effect appears to depend in no particular on the elevation of pressure, for it may precede it and frequently outlasts it. Contrary to what has been determined by Binz, the pulse, Dr. Frenkel states, did not appear to be affected.

When benzoate of sodium and caffeine are injected under the skin, in doses of from 2 to 9 grains, increased arterial pressure is produced with remarkable rapidity; therefore the author recommends this dose administered subcutaneously as an admirable means of combating collapse in cardiac subjects and in various other pathological conditions.

Morphine, in subcutaneous doses of 1/6 to 1/2 grain, sometimes produces slight increase in arterial pressure, sometimes is without influence upon it, while but slight modification of the pulse is produced. It would thus appear that it is unwarrantable to regard morphine as a dangerous remedy in subjects of heart-disease, although it should be noted that the author's experiments, with one exception, in this connection, were made on individuals in whom the heart was perfectly normal.

Sulphate of atropine injected under the skin, in the dose of 1/100 to 1/64 grain, produced marked increase in blood-pressure, usually manifested after about twenty minutes or half an hour, which persisted for an hour or more. The pulse, as a result of this dose, is sometimes accelerated, sometimes the effect is variable. The quantity of urine secreted is not modified by this injection.

Under the influence of ergotin (Nienhans) intra-arterial pressure is elevated to about the same degree as follows the use of atropine within one or two hours, while at the same time the pulse is usually considerably slowed.

The experiments made by the author with digitalis on patients affected with cardiac lesions and disturbed compensation have furnished results which are concordant with experiments made before and which are already classic.

CARDIAC DISEASES.

At the meeting of the Hunterian Society, held October 8, 1890, DR. PYE-SMITH read a paper on some points in the "Prognosis and Treatment of Cardiac Disease" (*Lancet*, October 18, 1890). Dividing his subject into three heads, the author dealt with functional diseases, and with organic diseases unattended by changes in the valves in abstract only. In the latter category primary dilatation of the heart, well known to factory and army surgeons, was referred to overstrain in youth and young adult life, while the dilatation following specific fevers formed a distinct class, and was of graver prognosis. A case of recovery from ulcerative endocarditis was related, in which emboli had been observed in various arteries forming aneurisms. Under the third head, diseases depending on organic valvular changes, details were given as to the relative gravity of the various lesions. He instanced cases in which a slight form of pulmonary stenosis had allowed of patients attaining adult life; one lady was living over 50 years of age; next to this case was a young man who died at 24. In aortic obstruction much depended on the cause; in the senile form, fatal syncope was not uncommon. Mitral stenosis usually came under notice when regurgitation had been added, and the symptoms were then like those of primary regurgitation, but much less amenable to treatment. Degenerative sclerotic processes of later life were more dangerous than the rheumatic changes of youth. The completeness of compensation was to be judged of by general signs, easy respiration, etc., rather than by the amount of hypertrophy and dilatation present. In children the lesions developed were always rheumatic; there was very little danger of sudden death, and much less liability to dropsy; the aspect often suggested phthisis. In the later stages of all heart disorders mitral failure came on, and the cases got much alike. The prognosis was generally better for women than for men; the kind of life led was a great factor. Private practice yielded far better results than hospitals. Dr. Peacock stated six or seven years as the longest survival after aortic incompetence had developed; this was too short, and several cases were now adduced showing ten or fifteen years or more. As to life assurance, he thought a murmur should debar acceptance on any terms, unless it was found to be functional and disappeared in a few weeks; the risks were great. Treatment often had the most striking results in the worst cases,—*e.g.*, in waterlogged subjects, where digitalis, tapping of abdomen, or acupuncture of legs (preferred, on the whole, to Southey's tubes) rescued from the brink of the grave. The sitting posture in a high arm-chair often helped; water

gravitated to the legs. Strophanthus he had not found better than digitalis, but useful to replace the latter on occasion. Convallaria was quite inferior to either, but good for dropsical children. Hyoscyamus relieved pain; antipyrin was unsafe. Sulphonal in hot milk or with tincture of lavender was useful in restless conditions. Venesection might be used to subdue pain and to relieve the distended right side of the heart. He disapproved of Oertel's treatment by heart gymnastics, which were likely to disturb compensation.

THE TREATMENT OF DELIRIUM TREMENS.

Two questions arise in the formulation of methods of treatment of delirium tremens,—first, is there any specific remedy in this disease; and, second, should alcohol be admintered during the treatment?

At a recent meeting of the Society of German Naturalists and Physicians, held in Bremen, DR. AUFRECHT delivered an address on this subject, in which he offered the following solutions to the problems above mentioned (*Wiener Medizinische Blätter*, October 8, 1890).

The author stated that he had never seen any favorable effect follow the employment of opium or morphine, that he now only employed chloral hydrate, 60 grains being given towards evening in a mixture of simple syrup and syrup of orange-peel. He has usually found that on the very first day of treatment this remedy is capable of producing sleep. Nevertheless, he repeats it on the second and on the third evening, while on the second day a dose of 30 grains may perhaps be necessary in the morning and also on the fourth day, and perhaps even on several subsequent days. Under no conditions does he ever administer alcohol, and this also applies to morphine. From 1880 to 1890 he writes that he has treated two hundred and ninety-four different patients, and of these only ten died. Most of those which proved fatal had received morphine, while of the last one hundred and twenty-four which he treated only with chloral, none proved fatal.

His method is, when acute cases of delirium tremens are received in the hospital, to give half a pint of Hungarian wine in tablespoonful doses, or an aromatic alcohol mixture, consisting of alcohol, simple spirit, and aromatic tinctures, for the tonic effect. The average duration of time during which the patients remained in the hospital was a little over two weeks.

In the discussion which the reading of this paper evoked, DR. THOELE stated that he had unpleasant associations with chloral, and now never gave either it or alcohol. He now employed hot baths, of about fifteen minutes duration, followed by a cold douche, and noted that on the third night of this treatment sleep always occurred.

JÜRGENSEN, on the other hand, had employed even larger doses of chloral than recommended by Aufrecht, and had never seen any hurtful effects, and he referred to one case who was in the habit of taking daily nearly two quarts of absolute alcohol, and in whom he gave from one hundred and twenty to four hundred and sixty-five grains of chloral in twenty-four hours. He had also not entirely stopped the use of alcohol, which had been administered by him in the form of cognac, in order to avert the threatened pulmonary œdema and cardiac paralysis. He never, however, gave morphine; sometimes he also gave hydrochloric acid in addition to the chloral.

THE FREE ACID OF THE GASTRIC JUICE DURING DIGESTION.

VON JAKSCH (*Zeitschrift für Klinische Medicin*, Bd. xvii. p. 383) makes an interesting contribution to our knowledge of the above subject. He finds that free hydrochloric acid is present in considerable quantity as early as a quarter of an hour after the ingestion of food. The quantity depends on the character of the food, and usually reaches its maximum in from one to three hours. This increase, however, is not a steady one, but shows intermissions after the first hour and a quarter, hour and a half, or even two hours. It is always most rapid on a meat diet, slower on milk diet, and slowest of all on a pure carbohydrate diet. The greatest quantity of acid found in any one case—.1615 per cent.—was obtained on a milk diet (fourteen observations); slightly less on a meat diet, .1563 per cent. (eleven observations); and least of all on a carbohydrate diet, .1102 per cent. (ten observations). Digestion appears to be completed most rapidly on a meat diet, next in order coming carbohydrate and milk diet. He concludes that entire absence of free hydrochloric acid from the gastric juice, or its presence in traces only, during the first quarter to half an hour of digestion, is without pathological significance. If no free acid is

present one to three hours after ingestion of meat or milk, it is extremely probable that some severe disturbance of gastric function exists. On a carbohydrate diet, on the other hand, the presence of a mere trace of free hydrochloric acid is quite consistent with conditions of health. Furthermore, we are not justified in concluding that the presence of free acid in considerable quantity two to three hours after ingestion of meat or milk points to some pathological condition, as wide variations are possible within physiological limits.—*British Medical Journal*, October 18, 1890.

THE COMPARATIVE VALUE OF THE BINIODIDE AND THE BICHLORIDE OF MERCURY AS SURGICAL ANTISEPTICS.

At the meeting of the American Gynæcological Association, held September 16, 1890, Dr. Charles Jewett read a paper on the "Comparative Value of the Biniodide and the Bichloride of Mercury as Surgical Antiseptics" (*Medical Record*, October 11, 1890). The biniodide of mercury, if used in proper concentration, is as potent in its germicidal properties as the bichloride. It is less unstable as a chemical compound, is more agreeable to the operator, and it is less toxic. Experiments made at the Hoagland Laboratory justified the following conclusions: 1. In equal concentration the biniodide is slightly inferior to the bichloride in germicidal power. 2. The difference in the efficacy of a 1 to 1000 and a 1 to 2000 bichloride solution is insignificant. 3. The activity of a 1 to 2000 biniodide solution is materially greater than that of a 1 to 4000 solution. 4. For equal potency as a sterilizing agent the biniodide should be used in a more concentrated solution, say 1 to 1800. The use of alcohol before the sterilizing solution, by its hygroscopic action, gives a better result.

ADMINISTRATION OF MORPHINE BY THE NOSTRILS.

At the meeting of the American Rhinological Association, held at Louisville, Ky., October 6, 7, and 8, 1890 (*Medical Record*, October 25, 1890), Dr. Carl H. von Klein, of Dayton, O., read a paper on this subject. He said in the administration of morphine by the mouth there is generally, besides an appreciable taste, a great deal of hacking and spitting, in many instances to such an extent that it produces an irritation of the throat, especially of the soft palate. In persons not accustomed to its use it produces nausea and vomiting. Billroth reports the case of a lady, who took ½ grain, in whom he saw such anxiety, nausea, and vomiting that, although suffering intense pain, the patient refused to take the remedy again. Dr. von Klein has administered morphine through the mucous membrane of the nose in over one hundred cases, with very satisfactory results. The manner of administering morphine through the olfactory canal is simply by snuffing it up the nasal chambers in the same manner as snuff tobacco is used. The dose is divided into two equal parts, each part being placed upon the end of the thumb and snuffed up into the nostrils. He has found this mode of administering it the most reliable, as it is tasteless, and the drug is more prompt in its action than when administered either by the mouth or hypodermically.

ANÆSTHETICS IN NATURAL LABOR.

Dr. Chaigneau has made a comparative study of the different anæsthetics which are employed in parturition, and his results are published in the *Journal de Médecine* for October, 1890. Although these agents are extremely numerous, attention need only be directed towards chloroform, chloral, antipyrin, and cocaine, as they are about the only ones given which it is warrantable to employ under these circumstances. Antipyrin, the author shows, has only given moderately satisfactory results; while it possesses many advantages, yet the inconvenience of requiring large doses, which are apt to prove irritating to the stomach and intestine, detract from its value. Chloroform, on the contrary, in the author's opinion, possesses so many advantages that it is surprising that it is not more frequently employed. He claims that it has no action on the delivery or on the production of post-partum hemorrhages, or on any of the conditions of the puerperal state. He maintains that it is indicated in all cases where suffering is excessive, where the contractions of the uterus are spasmodic or where there is a spasmodic contraction of the cervix, where there is placental retention from uterine contraction, or where there is a rigid perineum. The only contraindication to the use of chloroform is chloro-anæmia, with a tendency to syncope. He even maintains that acute or chronic pulmonary affections, diseases of the heart, kidneys, or of the

nervous system, need not interfere with the cautious administration of this anæsthetic.

Cocaine has been but little employed in such conditions. It may, however, serve to render great service in diminishing the pains which attend the passage of the head through the vagino-vulvar canal. The best results can be obtained if a five per cent. solution is employed, which may be administered on cotton tampons, allowed to remain for a few minutes, and then replaced by others. Such a procedure is even stated to accelerate labor, as, the suffering being less, the voluntary assistance rendered by the patient contributes towards hastening the termination; or a four per cent. ointment may be employed, also with apparently equally satisfactory results. It should be noted, however, that sublimate injections should not be employed simultaneously, as through their influence the alkaloid is decomposed and its properties are thus lost.

Finally, reference is made to subcutaneous injections eight or ten minutes before the expulsion of the head. These injections may be made directly under the labia, and prevent the violent pains which generally attend the passage of the head.

EFFECT OF CERTAIN SUBSTANCES ON THE RED CORPUSCLES.

M. Mayet, of Lyons, read an interesting paper at the recent meeting of the French Association for the Advancement of Science, in which he gave an account of the effects of various neutral salts and of chloral on the red corpuscles of the blood. Solutions of the strength of one or two per cent. of chloride of sodium, chloride of potassium, sulphate of sodium, phosphate of sodium, bicarbonate of sodium, and sulphate of magnesium, all at first temporarily destroy the elasticity of the corpuscles, and then dissolve or disintegrate the stroma. Solutions of the strength of five per cent. or more diminish the size of the corpuscles and harden them. The chloride of sodium has the most preservative primary action, but is most destructive on prolonged contact. As is well known, it has been recommended for washing the blood (in a .6 per cent. solution) in certain cases of poisoning. Sulphate of sodium has a great tendency to preserve the chemical properties of the corpuscles, but makes them much more rigid than does chloride of sodium. It is not suited for intravenous injections, but is very useful in the laboratory for washing the corpuscles before preparing hæmoglobin from them. For this purpose it is better than the three per cent. solution of chloride of sodium, which is commonly employed, but which has a considerable tendency to dissolve the corpuscles. Chloride of potassium has a great preservative action, but cannot be used for intravenous injections owing to its toxicity. Carbonate of sodium in weak solutions is very preservative. Phosphate of sodium in weak solutions renders the corpuscles rigid for a long time; it preserves their form well, and so is useful in diluting the blood for the purpose of counting the corpuscles. Sulphate of magnesium does not dissolve them, but changes their shape more than any of the other salts. Hydrate of chloral is very destructive to the corpuscles when it is in a concentrated solution, but not when it is of less strength than five per cent. Intravenous injections of the latter, which may be repeated several times daily, are very valuable in tetanus, in uræmic convulsions, to calm the violent spasmodic attacks in rabies, and in some painful diseases where hypodermic injections of morphine are inefficacious or badly borne. Of course the effects on the heart, respiration, and urine must be carefully watched.—*Lancet*, October 18, 1890.

DIETETIC RULES IN DISEASES OF THE DIGESTIVE ORGANS.

Dr. J. Boas (*Deutsche Medizinal Zeitung*, No. 43, 1890) deals generally with the dieting of stomach and intestinal disorders. In considering diet in such conditions, three points must be looked to,—1, the constitutional condition and the state of nutrition of the patient; 2, the surroundings and customary habits of the patient. Thus, the dietetic treatment of the workman must be considered from another stand-point than that of the well-to-do; 3, the most important point is the prescription of diet with the actual disturbance of digestion in view. The stomach, for example, gets out of order in two of its functions,—the motor and the chemical; absorption in the stomach plays a very small part in the functions of the organ, so that an endeavor must be made (by the use of the stomach sound) to discover (1) whether there is a disturbance of the gland function, and whether there are fermentative processes going on; (2) whether the motor activity of the stomach is at fault; or (3) whether both these conditions are present. There are cases, for exam-

ple, in which the stomach seems incapable, owing to deficiency of gastric juice, of digesting proteids; in these cases the digestion of carbohydrates may be perfect. Proteids in these cases must, therefore, be given in a prepared or semidigested form (albumen, peptone). In these cases fat is digested with difficulty, or rather, is split up into fatty acids by the fermentation in the duodenum, and so does not enter the lymph channels in the usual form of an emulsion of neutral fat. Sodium chloride is useful in these cases, since it helps to form the hydrochloric acid of the stomach, which tends to stop fermentative processes. On the other hand, there are cases where there is hyperacidity in the stomach. In these cases proteids are exceedingly well digested and carbohydrates but feebly acted upon, so that the digested forms, such as dextrines, malted foods, etc., have to be prescribed. For insufficiency of the motor activity of the stomach, enemata of half a litre, with a proper diet, are beneficial.—*British Medical Journal*, October 18, 1890.

THE ETIOLOGY AND TREATMENT OF TETANUS.

According to the Paris correspondent of the *Lancet* for October 18, 1890, at a recent meeting of the Academy of Medicine, M. NOCARD read a paper by M. Peyraud on this subject. M. Peyraud, having inoculated a number of rabbits with an infusion which he made from hay, says he was able by this means to bring on an attack of tetanus in fifty per cent. of the animals inoculated. The animals thus inoculated succumbed in the proportion of five out of every six. M. Peyraud has a theory that a chemical substance capable of exciting symptoms analogous to those caused by the invasion of the system by a given micro-organism will prove by inoculation to be a vaccine against the ravages of the microbe. He has applied this theory to strychnine, considered as the vaccine against tetanus. His method of proceeding was as follows: He injected hypodermically for a period of five or six days a dose of strychnine, varying the dose according to the size of the animal and the appearance of the convulsions. The animals being thus prepared, he inoculated them with pus obtained from an animal previously dead of tetanus. Ten of such rabbits were inoculated; but, in addition to these ten already prepared, he inoculated, as a controlling experiment, four others not previously protected by strychnine vaccination. The whole four non-vaccinated ones died and three of the ten vaccinated. The death of three of the prepared animals was attributed to a supplementary injection of strychnine which proved too strong. M. Nocard repeated these experiments by following a somewhat different method. He prepared a pure culture of tetanic bacilli from a lamb. Then he took ten rabbits and injected under the skin of each, for five days in succession, ten drops of a solution of sulphate of strychnine of the strength of 1 in 1000. He next inoculated the ten with his bacillary culture, controlling the experiment by at the same time inoculating ten untouched rabbits with the same culture. The result, however, was that they all died in from three to five days. He repeated the experiment with slight modifications, but the result was not less disastrous. The conclusion, therefore, was obvious.

COMMUNICABILITY OF DIABETES.

DR. RICHARD SCHMITZ (*Berliner Klinische Wochenschrift*, May 19) says that many years ago he noticed that man and wife occasionally were both diabetic. Up to 1880 he had met with eight such cases. Now he has observed twenty-six, and increased experience has taught him that quite healthy persons without hereditary predisposition, may become suddenly diabetic after tending a diabetic for a long time, sleeping in the same room and living intimately with him, especially kissing him often. In no single case was there any hereditary tendency or any blood relationship between the parties, nor was there any known cause for the diabetes; the persons had neither eaten much sugar nor suffered from gout. He thinks this number—more than one per cent. of the whole—is sufficient to justify the inquiry whether some cases of diabetes may be communicated by very prolonged and intimate relations with a diabetic patient. He relates the following cases: 1. J. M., aged 48, diabetic for two years. Urine contained 1.5 per cent. sugar. After treatment this disappeared. He was attended by his strong and healthy wife. Two years later they both returned diabetic, the husband much in his former state; the wife very ill. She had been diabetic for six months; percentage of sugar, 4.5. She was aged 31, had been previously healthy, came of a healthy family, was not related to her husband, had not eaten

much sugar; in fact, all explanation of the origin of the disease failed. She died in four months. 2. F., aged 38, diabetes discovered a year before, but had existed longer. Percentage of sugar, 4. He died in four weeks. His healthy and blooming wife brought him to Neuenahr and nursed him. Two months later she complained of being diabetic; severe pruritus led to its discovery. She was aged 34, had been six years married, had two children, came of a quite healthy family, with no hereditary predisposition; was not related to her husband, had not eaten many sweets; in fact, no cause could be discovered. The sugar soon disappeared. Next summer she came again in the same state, but in a month the sugar disappeared. She married in the autumn of that year. She returned three years later with her second husband. The urine still contained a little sugar, but there was no wasting or pruritus. Her second husband was, however, diabetic. He was younger than his wife, 35, not related to her, of a healthy family with no hereditary predisposition, had not eaten much sugar, and had never been dissipated. Percentage of sugar, 4; which disappeared after five weeks' treatment. Schmitz has since lost sight of them. 3. L., aged 55, diabetic five years, was attended by his wife. She suffered from sciatica, for which her urine was examined and found to contain two per cent. of sugar. This disappeared four weeks later. She was 45 years of age, not related to her husband; no gout or diabetes in family, no previous serious illness, no abuse of sugar. 4. X., aged 45, had lived for a year with a dancer, whom he gave out as his wife. She complained of being thirsty, and this young woman, of 22, was found to have five to six per cent. of sugar in her urine. The family history was good, she had been always healthy, and had not eaten many sweets. She died soon after. 5. F. M. X., aged 30, diabetes discovered a year before; sugar, 2.6 per cent. She was tenderly nursed by a healthy husband, who suddenly was attacked by so-called gastric fever. He examined his own urine and found it contained four per cent. of sugar. The husband soon recovered on careful diet, but the wife died. 6. Miss S. had nursed a diabetic friend, who died at Cannes, on her way back to England from San Remo. She had scarcely left her day or night. Some months later she developed diabetes; sugar, five per cent.; great emaciation. No cause could be found for this, except the emotion due to the death of her friend. 7. A., aged 68, five years or more diabetic, two per cent. sugar. His wife, who was about the same age, accompanied him. A fortnight later the wife complained of weakness, and her urine was found to contain four per cent. of sugar. On careful diet this disappeared in three weeks. There was no hereditary tendency, she was not related to her husband, her previous health had been good, and she had not eaten much sugar.—*British Medical Journal*, October 18, 1890.

PASSAGE OF TUBERCLE BACILLI THROUGH THE INTESTINAL CANAL.

Some interesting experiments have lately been made by Zagari on dogs fed with tubercular food. These are interesting from two points of view,—first, that our knowledge of the action of the digestive juices on the tubercle bacillus is small; and, secondly, that tubercular processes as affecting the dog have been little studied. Dogs were fed on sputum which had been proved to contain large numbers of tubercle bacilli. After the course of from ten to twenty hours the bacilli were detected by means of the usual color tests in the fæces, and continued to occur for two or three days, occasionally five or six days, after the tuberculous material had been removed from their food. The dogs continued healthy and entirely free from signs of tuberculosis, although the sputum was mixed with their food for some time, and meat known to be tuberculous was also given. Experiments were now made to endeavor to ascertain what substances in the digestive tract prevented the growth of the bacilli. The bacilli found in the fæces were shown by inoculation on other animals to be virulent. It was also demonstrated that washings from the stomach also contained active germs. Although the food was allowed to remain in the stomach for three or four hours before being washed out, yet the organisms were not entirely destroyed. After six hours' stay in the stomach inoculations on guinea-pigs still produced tuberculosis, but their action was delayed. After from seven to nine hours a local infection only was the result, and after from eighteen to twenty hours no effects at all were noticed. An interesting point in connection with these results is that the gastric juice of a dog contains a higher percentage of acid than in man. As the analysis of the contents of the stomach did not explain why the dogs did not become tubercular, the further course

of the bacilli was next investigated. It was shown that the bacilli found their way out of the intestinal canal into the tissues, for the blood of the dogs was proved to be infectious,—that is to say, produced tuberculosis when inoculated; the same effect was produced by the lymph from the thoracic duct; also by portions of the liver, when introduced into the peritoneal cavity of a guinea-pig. When portions of the tissues were examined microscopically the result was negative. A few bacilli, however, were found in the spleen. When young dogs were fed with sputum they died, not of tuberculosis, but of a form of "intoxication." Further researches on dogs were then made with pure cultures of tubercle bacilli. When inoculated under the skin a local affection was the result, which usually ran a favorable course. When the injection was made into the pleura a local pleurisy and tubercular disease of the lung were produced which proved fatal. When intravenous injections were tried the results were again negative. The bacilli obtained from the fæces, as described above, although virulent, had lost some of their vitality. Pure cultures exposed to a temperature of 55° C. for eight days were not destroyed, while the bacilli from the fæces were killed after an exposure of five days. Again, if these bacilli were dried, after from sixty to ninety days they were no longer infectious, while Ichill and Fischer have shown that bacilli in pure cultures retain their virulency for a far longer period than this.—*Lancet*, October 18, 1890.

PHYSIOLOGICAL ACTION OF CAFFEINE.

Drs. Semmola and Marcine have recently concluded an elaborate series of experimental investigations as to the physiological action of caffeine, and their results, which are about as follows, are published in *La France Médicale* for October 17, 1890:

The dog shows a marked tolerance for caffeine. Three grains may be injected subcutaneously in a dog weighing only five pounds without producing any marked phenomena other than slight increase in the number of the heart's pulsations and increase in the vivacity of the animal and a tendency towards micturition and defecation. To apply these experiments to the proportion of a dose applicable to man, not only the body-weight must be taken into account, but the ratio which exists between the weight of the body and that of the central nervous system on which caffeine mainly exercises its action Therefore in man the dose of caffeine shoul be three times as much as that which is re quired to produce an effect on the dog Doses of 6 grains injected into the subcu taneous tissue of a dog weighing five pound produced considerable increase in the fre quency of cardiac movements and respirator movements, with a diminution of cardiac pressure. Doses of 15 grains produce grea excitement, which lasts for about two hours the cardiac pulsations increasing in frequency the blood-pressure diminishing. Graduall this action is succeeded by a reduction in th number of pulsations, with increase in blood pressure and the amplitude of the cardiac systole. Large doses—30 grains or more—some minutes after injection produce mus cular contractions of central origin, whicl finally pass into complete tetanus. The con vulsions, however, gradually pass off, anc only a state of great excitement and agitatio remain. The heart first has its pulsation increased and pressure lowered, but soo the frequency diminishes to even belov the normal amount and blood pressure i increased.

The action of caffeine is principally ex erted upon the nervous system, and, as th cardiac effects only appear later as the resul of increasing doses, caffeine ought not t be included among the remedies which ac primarily upon the heart.

Caffeine does not act upon the pneumogas tric except in very large doses. Thus it i necessary in severe cardiac affections to ad minister large amounts of this drug to pro duce any effect, but the action on the pneu mogastric nerve is to retard the effects of th administration of caffeine, though it is pre ceded by dilatation of the blood vessels anc increase in the vigor of cardiac systole. Caf feine produces marked irritation of the refle apparatus of the spinal cord, while both th striated muscular fibres and the muscular fibr of the heart are stimulated by caffeine. In ad dition to the therapeutic indications alread well recognized concerning the use of caffein in heart affections, Professor Semmola write that he has employed it with success in nu merous affections of the spinal cord. Espe cially in central nervous disturbances o respiration he claims that its results are mar vellous, and that caffeine is to be regarde as a powerful stimulant to the central nervou system in marked states of prostration, in in fectious diseases especially, in relieving res piratory disturbances. Further, he claims

that it is capable of relieving the nervous symptoms which so often occur in the course of diabetes mellitus.

THE ACTION OF EXALGINE.

According to the Paris correspondent of the *Lancet* of October 18, 1890, M. DESNOS has recently undertaken a series of researches on this new substance. He finds its influence on high temperatures to be very slight, while its action as an anodyne is, on the contrary, very marked. He insists, however, on the sensations, almost amounting to vertigo, which not unfrequently manifest themselves when the drug is administered under certain conditions. Sweating, often profuse, was also noted in many instances, often localized or most marked at the spot where the pain for which the drug was given had its seat. These drawbacks did not usually supervene except when the dose administered ranged from 50 to 75 centigrammes. With the latter amount very slight cyanosis, which often escaped observation, was developed. He finds that the alteration of the blood does not go the length of developing methæmoglobin, as has been asserted by Henocque, but there was a certain amount of destruction of oxyhæmoglobin. Generally speaking, this substance is well borne by the digestive organs, eruptions being rarely or never developed. The urinary secretion is usually diminished in quantity and gives chemical reactions, showing the presence of exalgine in considerable quantity, which goes to show that it is largely eliminated by the kidneys. As to dose, 25 centigrammes will sometimes suffice; 50 centigrammes, however, is an average dose, but as much as one gramme and a half may be given in twenty-four hours, in divided doses of 25 centigrammes. M. Desnos has employed this substance in facial neuralgias, especially of a congestive origin. In a case of ophthalmic zona one gramme and a half relieved the suffering, which was most acute. Cure was also soon brought about by means of exalgine in neuralgia of a syphilitic or anæmic origin. In intercostal neuralgia the relief obtained was not so satisfactory, while in that of the abdominal regions again the effect was good. In a severe case of sciatica the exhibition of one gramme and three-quarters during a period of three days completely removed the pain. It was also found of great service in a case of renal colic; while in tabes dorsalis it appreciably diminished the lightning pains. In short, exalgine is an important addition to the Pharmacopœia, and will be found of service in suitable cases, provided it is handled with ordinary care and intelligence.

Reviews.

DISEASES OF THE RECTUM AND ANUS. By Chas. B. Kelsey, A.B., M.D. Third edition. Rewritten and enlarged.

New York: William Wood & Co., 1890.

The fact of a surgical work, on a special subject, reaching a third edition within a decade is sufficient to determine the value of the book; it speaks in undoubted praise of the merit of the author's labor. In our notice of a former edition of Dr. Kelsey's work we then considered the book as a valuable addition to the literature of its special subject, and what was then said can only now be repeated with more emphasis. There has been considerable progress made in this branch of surgical practice during the past few years, and our author has not neglected to advance, but in all that is of any importance relating to his subject he has well analyzed, not hesitating to differ where, in his opinion, a difference is advantageous. Not only has the context been added to and rewritten, but there have been also added many illustrations, which will be found to assist greatly in the understanding of the text and in the performance of the operations, which may be necessary in the practice of rectal and anal surgery.

The chapter on fistula in ano is a most excellent one, more especially in reference to those very difficult and tedious operations in which there are present complications, such as multiple fistulæ, abscesses, and numerous burrowing sinuses; also the treatment of cases in which incontinence has been a result of the operation for fistula is well illustrated and fully described; indeed, it would seem, from the experience of the author, that there are no cases in which an operation may not be attempted, and few in which relief may not be expected. In cases of simple fistula in ano, the operation of cutting the fistula, of dissecting out the tract of the fistula, and then approximating the edges by means of deep sutures, is one which in our hands has so often given such good results that we would have its merits more emphasized than has been done in the book. Dr. Kelsey has well said, "If the attempt be successful, much

time will be saved, and if it fail, nothing is lost."

The chapter on hemorrhoids we turn to with considerable interest, since the frequency of this affection, and the recent discussions in regard to the best method of treating it, have given the subject more than usual attention. It is well to note that our author, in reference to the treatment of this lesion, has very decided views as to the result of treatment. He writes as follows: "The latter [the surgeon] can assure the sufferer that he may be cured at once and forever if he desires, and this applies to all forms of the disease." The methods of operation for the cure of hemorrhoids are said to be four in number,—viz., the ligature, the method of injection, the clamp, and the method of excision; other methods than these are not now considered worthy of mention. Of these procedures, Dr. Kelsey gives preference to the clamp and cautery. In our own experience, and we have had quite a number of cases during the past five or six years, we have been so well satisfied with this method that we are in perfect accord with him as to its results, and also as to its advantages over all the other methods. The operation of injecting carbolic acid, which in a former edition was so much praised, is now spoken of as follows: "In writing now I shall use less glowing terms than I did then, but I have by no means abandoned the practice." In other words, the cases must be selected, and those suitable are to be treated by this method. The objections to this procedure are given thus: "Pain, ulceration, marginal abscess, fistula. The impossibility of giving any definite prognosis as to the length of time necessary to effect a cure, or the amount of suffering the treatment will entail. The fact that the treatment does not result in a radical cure, but the tumors may reappear." It seems to us with such an array of objections, no surgeon, if he is convinced of their existence, would be justifiable in ever performing this operation. The operation of excision, or Whitehead's operation, is said to be "a naturally difficult, tedious, and bloody operation." This view of the procedure we can only accept in a relative sense,—that is to say, in comparison with some other operation for the lesion. That it is more difficult than the method of applying the clamp, no one will deny; that it is more tedious than this latter operation depends much upon the nature of the case; that it is more bloody may also be admitted; yet, after reading the objections made by our author, and many of them ar well taken, we cannot but conclude that th operation of excision for hemorrhoids may, i selected cases, be the most desirable and giv the best results. We believe it is an opera tion which has come to stay. What is yet t be decided is, when to perform it. The metho is, like all other surgical operations for th cure of any lesion, and may have the rul applied to it that no operation is always suit able to every case, each case is to be judge by itself, and the method which seems best i the one which is to be employed.

The chapter on non-malignant ulceration is a most excellent one, and in a very exhaus tive manner goes over the various forms o ulcers which are liable to be met with in thi locality, among which is classed that variet commonly known as a fissure; and the remark of Dr. Kelsey, in regard to the treatment o this affection are so appropriate that w quote them: "There are many analogies be tween fissure of the anus and fissure of th lip, and early in my practice it occurred to m that tearing the mouth wide open would b rather severe practice for a cracked lip, an doing the same thing at the anus was un necessarily severe for a fissure." A numbe of cases are given in which the results hav been all that could be desired. The metho employed by him has been to use mild means and he has found that a weak solution of ni trate of silver (gr. v or x to the ounce), ap plied by means of a camel's-hair brush, com bined with a light laxative, will heal th majority of cases in a very short time.

Venereal diseases of the rectum and anu are affections which, even at the present day still remain open to discussion. Opinion i yet divided in regard to much that relates t this subject, and we have read this chapter o our author with much interest. Unnatura sexual vice as an etiological factor in thes diseases must be admitted, but that it i practised in this country to the extent tha French and German writers state it is i their countries we do not believe, and we ar pleased to see that Dr. Kelsey is also of thi opinion. Of the venereal diseases that ma affect the rectum or anus,—gonorrhœa, chan croid, and chancre,—none are very common but most authorities acknowledge that suc lesions may occur. Dr. Kelsey says, "I my own practice I have never had occasio to suspect its existence but once, and then could not be positive, the patient—a woman—denying any unnatural intercourse, and ther being another explanation of the conditio

equally good." The chancroidal ulcer is more often met with than the former affection, and generally due to auto-inoculation, or it may occur by direct contagion. Dr. Kelsey truly remarks, "And though they may be due to unnatural intercourse, their presence is no proof in itself of the vice." The initial lesion of syphilis,—the chancre,—our author writes, is not very uncommon, and if the writings of Péan and Malassez are consulted, this would seem to be a fact. Thus, they give "the proportion of one chancre at the anus to every one hundred and seventy-seven in other parts of the body in men, and the proportion of one in thirteen in women." This may be true of France, but we do not believe it can be said of this country; at least our experience does not reach any such proportions.

Of the remaining chapters of the book, that on stricture of the anus is particularly worthy of notice; also that on the formation and closure of artificial anus, in which the operations of enterorrhaphy and intestinal anastomosis are briefly but very clearly described.

In concluding our notice of the above work, we may say that we have not given as complete a review of the book as its value demands. Only a few of the additions to this, the third edition, have been noted, but, in a few words, to estimate the excellency of the book, we can congratulate Dr. Kelsey in being the author of one of the best works on diseases of the rectum and anus.

J. H. C. S.

ANNUAL OF THE UNIVERSAL MEDICAL SCIENCES. A YEARLY REPORT OF THE PROGRESS OF THE GENERAL SANITARY SCIENCES THROUGHOUT THE WORLD. Edited by Chas. E. Sajous, M.D., and seventy associate editors, assisted by over two hundred corresponding editors, collaborators, and correspondents. Illustrated with chromo-lithographs, engravings, and maps.

Philadelphia, New York, Chicago, Atlanta, London: F. A. Davis, 1890.

With the increased pressure of modern life, work must be done in a different way from that which answered very well twenty years ago. Take the multiplicity of divisions which have originated in medical science; the minute study fostered by division; consider even the immense increase in medical periodical literature, and one is at no loss to see why the practitioner can no longer study in the old-fashioned way. The city physician may belong to medical clubs, and possibly find time to look over most of the periodicals bearing upon the branch of practice which he affects, but even then the work is hastily done, the mind is scarcely impressed, the vital article is somehow omitted, and in the country it is virtually impossible for a man in this way to keep abreast of the times. Books are too slow in appearing, periodicals contain the work of the day, and give its history literally from day to day. Some may fall back on the self-satisfying thought that all the new work is useless, ephemeral novelty, and pursue the even tenor of their way, becoming daily more and more like the derisive appellation often bestowed upon them. Fossilized in brain, limited and more limited, till finally nature only completes the process by general extinguishment. For the others,—those real wonders of our medical age, the men scattered everywhere in sparsely-settled regions, as well as in crowded cities, who overcome all disadvantages and aim to know everything known,—the fact is only possible by the use of the modern appliances, of which the work before us is a splendid example. Annuals, retrospects, journals like the *London Medical Record*, all the pages in good journals devoted to recent progress in medicines, live transactions of live societies, these are the foods on which the active but isolated mind thrives and grows. Without some one to collect, extract, sift, analyze, arrange, the busy man and the useful man could never find time even to know what the medical world was doing, much less be incited to imitate, to invent, and excel.

To review a work like the "Annual of the Medical Sciences," in the ordinary way, would be as difficult as to review "Webster's Dictionary." All that can be done is to tell of its excellences, its methods, its editors. To begin with its editors, it has, besides Dr. Sajous, seventy associate editors, and these are assisted by over two hundred corresponding editors, collaborators, and correspondents. These figures give one some idea of the amount of work done. As to its methods, it is divided into sections; for instance, Section A treats of the lungs and pleura, and is edited by Dr. James T. Whittaker, M.D., assisted by others. In this section is comprised all the work of the year that is new, extracts from new papers, very extended in many cases, and so cited in the text as to be of easy reference if the whole paper is desired. The article begins with "Tuberculosis," and the compilation is arranged under the successive headings of "Etiology," "Invasion by the Alimentary Canal,—Food and Drink," "Invasion by the Lungs,—Sputum," "Infected

Houses," "Symptomatology," "Pathology, Dyspepsia, Studies of the Functions of the Stomach in Phthisis," "Lungs and Liver," "Arteries," "Conformation of the Chest," "Diagnosis," "Detection of Tubercle Bacillus," "Prognosis," "Prophylaxis," "Auto-infection," "Treatment,—Climate;" and then under each remedy which has been advocated we have extracts. This one instance will give the reader an idea of the fulness of the work, and its value not only to the practical worker but to the student and writer.

The value of the work, as will readily be seen from the above, lies in its extent and in the conscientious manner in which its editors have treated their task. Its five volumes, while formidable, perhaps, are none too extensive; there seems to be no padding. Whether in succeeding years so rich a harvest can be gathered from a year's work remains to be seen. Probably the editors will have to glean as well as reap, but for what they have done in the present edition we hope the profession will be properly thankful, and show their sentiments by supporting an invaluable work. E. W. W.

SCHEME OF THE ANTISEPTIC METHOD OF WOUND TREATMENT. By Dr. Albert Hoffa. Translated from the German by Aug. Schachner, M.D., Ph.G. Louisville, Ky.: The Bradley & Gilbert Company, 1890.

The above is a very convenient arrangement, for quick reference, of the antiseptic method of wound treatment. First are given the antiseptic means, which includes the formulæ of the different antiseptic powders, of the antiseptic solutions, of the antiseptic salves, of the antiseptic ligature material, of the antiseptic suture material, and the various drainage material; second, the aseptic operation; third, the antiseptic operation; fourth, the aseptic or antiseptic dressing; fifth, the special modifications of Lister's treatment.

FAMILIAR FORMS OF NERVOUS DISEASE. By M. Allen Starr, M.D., Ph.D., Professor of Diseases of the Mind and Nervous System, College of Physicians and Surgeons, New York. With illustrations, diagrams, and charts. New York: Wm. Wood & Co., 1890.

This book presents a most pleasing exterior, simple and artistic, which suggests at once the peculiar attributes that characterize the intellectual work of its author,—a peculiar artistic neatness, which is, however, strangely at variance with the inaccuracy of the title-page in its relation to the contents of the book. In the first place, so far from the major part of the book being devoted to the "familiar forms of nervous disease," it is given over to the discussion of the most recondite and "uncommon" forms of nervous disease; and, in the second place, the volume is only in part the work of Dr. Starr, being in fact, the conjoint production of Drs. Starr, W. W. Skinner, F. Peterson, and W. Vought. The book is very far from containing a complete survey of the diseases of the nervous system, and the subjects which have been chosen seem to have little or no connection with the title. Thus, the first one hundred and sixty-six pages are devoted to the study of the localization of the lesions of the brain and spinal cord. Then comes a chapter upon locomotor ataxia, followed by successive chapters upon chorea, epilepsy, etc., ending with a register of a list of the cases treated at the Vanderbilt clinic, and a sort of pharmacopœia of that clinic. We have read three-fourths of the book, and in this reading have been strongly reminded of the description in Scripture of the image, part of which was brass and part of which was clay. The chapters by Dr. Starr upon localization are carefully written, and show everywhere a thorough knowledge of the subject, while some of the other chapters are so weak as to be utterly unworthy of publication in anything except a primer of nervous diseases. We do not altogether agree with the roseate view of the value of cerebral surgery that seems to underlie the work of Dr. Starr. The rational hope of effecting anything in brain-disease by the use of the knife seems to us confined to a very narrow range of cases. Any one who wishes the latest discussion of cerebral localization will be repaid by buying the work of Dr. Starr, but the rest of the book, with the exception of a few scattered pages, seems to be chiefly of value as an advertisement of the Vanderbilt clinic. The pharmacopœia of that clinic, as here printed, would appear to indicate that modern therapeutic light had scarcely penetrated into such a remote corner of New York City. In their mediæval polypharmacy and total disregard of incompatibilities, chemical and physiological, some of these prescriptions are as interesting to the therapeutic relic-hunter as is Rothenburg on the Taube to the nineteenth century traveller wearied with the monotonous uniformity of modern cities. Two hundred and fifty years are said to have elapsed since the last brick was laid in that ancient burgh; but what can be said of mistura cephalalgica (heaven save the Latin!), in which one-eighth of a grain of

morphinæ acetus struggles with a third of a minim of spiritus ammoniæ aromaticus to maintain its pure existence, and then in hopeless degradation herds with one and a half grains of chloride of ammonium, one-twentieth of a grain of citrate of caffeine, half a fluid-drachm of elixir of guaiana and aqua menthæ piperita galore?

QUIZ COMPENDS, No. 12. A COMPEND OF EQUINE ANATOMY AND PHYSIOLOGY. By Wm. R. Ballou, M.D., Professor of Equine Anatomy, etc., New York College of Veterinary Surgeons, etc. With twenty-nine graphic illustrations selected from Chauveau's "Comparative Anatomy."

Philadelphia: P. Blakiston, Son & Co., 1890.

Next to the knowledge of man as an animal the knowledge of the horse is most useful to the physician. Since the successful physician or surgeon is the nearest modern representative of the mythological Centaur in the intimacy of his relations with and dependence on that noble animal, the work of Dr. Ballou, while intended for veterinary students, will prove of considerable value to the medical man, and will furnish him with much useful knowledge in convenient and easily-remembered form. Its method of question and answer will be of advantage to him, equally with the student of the veterinary schools, in enabling him to retain many facts connected with the anatomy and physiology of the animal which does so much in enabling him to make his living, keep his engagements, and do his life-work without dying of fatigue before he fairly begins.

E. W. W.

THE NEUROSES OF THE GENITO-URINARY SYSTEM IN THE MALE, WITH STERILITY AND IMPOTENCE. By Dr. R. Ultzmann. Translated by Gardner W. Allen, M.D., etc.

Philadelphia and London: F. A. Davis, 1889.

With the growing attention paid to the diseases of the female generative organs, and with the increasing tendency to relieve female diseases by radical and surgical procedures, it may seem strange that analogous male diseases are not the subject of equally thorough investigation. Probably with the growth in the next decade of a competent body of female practitioners and surgeons something more will be done for the relief of the hitherto neglected sex. Before many years we may hear of divulsion of the prostate for spermatorrhœa, and removal of the testis and cord for sterility. Who knows what changes may be taking place in those organs preparatory to the advent of the surgical woman? We have now high authority for the statement that the old-time sexual disorders of the female are vanishing, or have vanished, giving place to the remediable pyo- and hydrosalpinx, that hysterical joints are an extinct disease, like the dodo among birds, and that even ovaries are not so painful, that the suffering sexual system has found a way to cry out through the trumpet-shaped extremities of the tubes, and can be heard and answered. Now and then somebody, other than the advertising quacks, pays some attention to the male sexual system. Dr. Ultzmann does, and has given us another treatise, following the old, beaten path. Electricity is the special treatment advocated, and very careful directions are given about currents and poles. The author attacks the bug bear of spermatorrhœa valiantly, both with electricity and the "psychrophor," which, interpreted, means the "cold sound." Urethral suppositories and liquids by syringe are also recommended.

The author's study of sterility and impotence seems to add but little to the knowledge already in print on these subjects. He gives some cases of his own of considerable interest, but little or no novelty. The book, however, is to be commended for its purely scientific character, and for the absence of any attempt to pander to the curiosity of the non-medical reader. E. W. W.

PRACTICAL, SANITARY, AND ECONOMIC COOKING, ADAPTED TO PERSONS OF MODERATE AND SMALL MEANS. By Mrs. Mary Hinman Abel. The Lomb prize essay.

Published by American Public Health Association, 1890.

The perfect cook-book has not yet been written. With horror we think of the seventy essays which the Lomb prize called forth, and with added horror and acute gastric pain, of the fact, so innocently stated by the examining committee, that the present volume was so superior to the other sixty-nine that no second prize was warranted by the excellences of any of them. What instructive or destructive reading would they have made if only printed as curiosities. For it cannot but be admitted, we think, that the "prize essay" by no means comes up to the ideal standard. It has merits undoubtedly. It is scientific, and the author has studied recent physiological chemistry to good effect, but she lacks the sense of how to make the simplest dishes tasteful, and she lays but little or no stress on the method of serving food, which so often, if properly done, gives an increase of appetite, where seasoning alone

would fail. Her bills of fare, for their price, are too same and unattractive, and her range of edibles seems strangely enough to have no representative of the fish foods, which are certainly valuable enough to deserve mention. Think of a book on sanitary and economic cooking which fails to mention the oyster and clam at all, as far as we can discover, and whose author, for all we can gather from her work, thinks that fish-balls (cod) rather than fishes swim in the sea and are caught with a hook, the only mention of fish being fish-balls, of various sorts and kinds.

On the question of the utilization of soup-meat and its nutritive value she is all right, but one is struck in reading with the extreme paucity of articles of food when prepared for the table. Then, too, the prices of her fare-bills are by no means so low as one would expect from their tame and simple characters. Families living upon her thirteen-cents-per-head-per-day diet would experience a sort of remittent starvation, with occasional surfeit, while the eighteen-cents-per-day people, whose bills of fare, for some occult reason, are "not given in detail," would perhaps envy them, since they would not be sure what to eat. But the twenty-three-cents-per day swells, who have such breakfasts as oranges, milk-toast, and coffee, and such dinners as roast mutton and potatoes, corn-mush with sugar and milk, and wash them down with soda cream, and sup on parsnip soup with yeast dumplings, bread and butter, sponge-cake and tea, after suffering from dyspepsia, notwithstanding the chemical accuracy of their diet, and paying the doctor and apothecary, might be glad after all to fall back upon diet No. 1 with its cheapness, simplicity, and solidity. Certainly some good ideas, especially about bread-making, can be gleaned from the Lomb prize essay, but hardly enough to make it a complete and desirable guide.

E. W. W.

Correspondence.

BERLIN.

(From our Special Correspondent.)

The Congress of German Naturalists and Physicians, or rather the annual session of the Society of German Naturalists and Physicians, was held in Bremen. In accordance with an old custom, it had been determined—and rightly, too—not to omit this gathering, although the session of the International Medical Congress had been held a short time before in Berlin. The meeting of this Society was a success, and, although the number of participants present were less than at previous meetings in Germany, there being present, however, twelve hundred and sixty-one members and five hundred ladies. This was caused by the fact that former attendants were now seeking recreation elsewhere, after the severe strain they had undergone during the summer, not only in study and practice, but also in their attendance upon the Congress in Berlin; while others had to devote themselves to their customary vocation of attending to the sick and the study of science. When Von Hoffmann, in consideration of his advanced age, begged to decline the honor of a re-election to the presidency, Professor His, who, up to the present time, had been filling the vice-presidency, was elected to fill his place; and, at the same time, Professor Quincke, of Kiel, was appointed to the position made vacant by him. Halle was announced as the place for the next session of the Society.

During the course of the general meetings, therapeutics was rather secondary to other scientific themes, which latter were the principal subject under discussion. The whole attention of the audience was completely riveted by a medico scientific essay by Rode, who forcibly advocated the sea-shore for the treatment of scrofula and the early stages of consumption. As the Society accepted the invitation to the management of the baths at Moderney, there was thus given them an opportunity of being convinced of the efficacy of the sea life itself, as well as of that of children's hospitals and cheap boarding-houses, for the sake of making life at the sea-shore possible to a larger number. Even more important did the discussion of the treatment of the earlier stages of consumption seem just now in Germany, when the attention, not only of medical but of all other scientific men, is concentrated upon this subject by the impulse given to it by Leyden, who, next to the doctors themselves, was the warmest advocate of resorts by the sea-shore for the treatment of phthisis, because only in its beginning is it curable, and also because the lives of so many are dependent upon its being recognized and properly treated from the first.

The spirit of inquiry that has lately been developing in expert circles has produced some wonderful changes in our opinions in regard to hygiene. Our views have altered, not only in regard to the prevention, but also to the treatment, of disease, and most radical

changes have occurred in the method of erecting and managing hospitals. One that may be cited as an example of this fact is the recently-completed public municipal hospital in the southern part of Berlin. This is so perfect in its construction without and in its management within as to seem incapable of improvement. The hospital consists of eleven departments, one of which, with sixteen beds, is reserved for patients with diphtheria. There is also a building for surgical operations, and such additions as are necessary for the management of the institution,—such as kitchens, bath- and store-rooms, an engine-house, and dead-house. All the lighting is done by electricity, produced by machinery, which is run by steam from the engine-house. Real fire is seen no where but in the latter building and in the laboratory, for in the kitchens steam is used for cooking, keeping the food warm, and heating the water to wash the dishes. During the day two large machines are in operation for furnishing the electricity, and besides this, according to Tudor's system, there are accumulators, which, in case of an accident to the machinery, would be able to carry on the work for a while. Moreover, during the night, this matter is so arranged that the sleep of the patients will not be disturbed by its noise. While after dark eight incandescent lights spread cheerfulness in each one of the wards, half of each one is during the night covered by a shade. Moreover, it is possible to increase or lessen each one of these burners separately. In the halls and operating-rooms this system is superseded by the arc lights. This is the first hospital that has departed from all other means of lighting but by electricity. Again, the means and apparatus for the application of electrical therapeusis is connected with the central electric system, so that a supply is always ready.

Heating the building is also done from a central system by means of hot water or steam in the common engine-house, and thence conducted through subterranean passages to the cellar of each building in which there is a heat-chamber. In case of the buildings that are heated by the hot water, the latter is warmed in the heat-chamber, and thence conducted by pipes to the separate rooms.

The subject of ventilation has been very carefully thought out. The air from a room, which is practically out of doors, is conducted into a space, where it is filtered through gauze, and, through subterranean passages, is thence conducted to the warming-room, where it is heated to a temperature of 20° C. Through this means there is a continuous supply of fresh air. The warm air is let into the rooms by registers close to the floor, while the removal of both hot and cold air is regulated by traps situated between the windows. In the upper floors the removal of the air is accomplished by sky-lights, which can be regulated by obliquely-fitting transoms, easily operated by a cord. In each ward there is an anemometer to show whether the ventilation is all right. The entrance of a draught of fresh air from the outside on either the patients or attendants is thus perfectly prevented. In the larger pavilions there are, leading from the basement to the garrets, elevators, which are used not only by those that are ill but also by convalescents in the upper stories to whom walking down-stairs is disagreeable. Each pavilion contains for each ward, in addition to the dining- and wash-rooms, together with the apartments of the attendants, a sitting room for the patients. This is intended for the use of such patients during the day as are not confined to bed, as well as for surgical cases and convalescents. All the pavilions are connected to one another by a walled subterranean passage. This is light and roomy, lit up by the incandescent lights, and serves for many purposes. It contains the pipes used for heating and ventilating, and in part serves to protect the conduits of the electricity for illuminating purposes. By this means, in case of an injury to the pipes or their contents, the location of the trouble can be easily located, and, in case of an accident to them, they can be fixed without troubling any but the part concerned. Besides, dead bodies can be moved through it from the cellar of a pavilion to the house where they are examined, so that the rest of the patients are spared seeing the corpses removed. All the pavilions, except the one situated in the midst of the others, and for the treatment of diphtheria, are connected together by covered passages whose walls on the outside are windowless, so as to keep out the noise of the street; but they open on the garden of the hospital, so that in bad weather the patients who are not under any restraint in regard to their management can enjoy the fresh air without exposure. The customary arrangements of hospitals, such as are seen in the wards, their being provided with beds and tables for the individual patients are perfected according to the most recent laws of hygiene. The management of the operating-room is under the direction of the chief of the surgical department, Werner-Korte. In it the walls and floor are kept as clean as possible.

Buffets heated by steam make it possible to keep the instruments constantly disinfected with boiling water. There is a smaller operating-room, with its own instruments and simpler outfit of appliances for operations of a septic or offensive character. In the upper story of the building are dried and kept bandages from the raw material, after their sterilization in a large Rietchel-Henneberger apparatus. In the dead-house there are laboratories, provided with all the modern appliances for the anatomical, chemical, pathological, as well as bacteriological examination and study of the subjects. This is under the management of Albert Frankel, the chief of the inner department. The washing and drying of clothes is done by steam. All the pavilions are connected by telephone with the main building.

BERLIN, October 12, 1890.

PARIS.

(From our Special Correspondent.)

Depopulation of France—Why does Blood coagulate?—Physiological Properties of Oil of Sweet Flag—Therapeutic Value of *Cassia alata*—French Use for Chinese Hair.

The depopulation of France, the paramount question of the moment, has occupied the Academy of Medicine for several sittings, and it was eminently proper for the guardians of public health to look squarely at the facts, and if possible to devise some remedy for such an alarming state of affairs. Yes, not only is French natality decreasing, but the rate of decrease shows but little sign of improving. On the contrary, it has become worse during the past few years, except the last,—1889. Without going into long arrays of figures, suffice it to say that in 1889 the number of births was very nearly the same as in 1888, slightly less, though. At the same time mortality greatly decreased. So that, on the whole, there was an increase of population, and some hope that the years 1887–88 saw the lowest point, and improvement may henceforth be expected. Yet this low rate of increase places France in a dangerous state of inferiority towards her not very friendly neighbors. Dr. Lagneau, who was the first in the Academy to start the ball in motion by a rather sensational report, proposed as a remedy quite a series of fiscal and economic reforms but little short of revolutionary. Dr. Javal, next taking up the subject, attributed the scant natality to voluntary abstention provoked by the whole system of legislation. For instance, the civil code, by indicting a compulsory division of all estates, real and personal, equally between all the children, has caused land-owners, big and little, to limit their progeny to one or two heirs. The system of indirect taxes which enhance the price of all articles of food, also acts as a premium on small families. Again, the military law bears very hard on large families, and more so in proportion than on smaller ones. On the other hand, the absurd French custom of giving to daughters large marriage portions makes it as undesirable for parents to have girls as to have boys in large numbers. French parents are, like others, ambitious for their children. They want to see them happy and above themselves in social position. To attain this result the shortest way is to limit the number of the offspring. Like Dr. Lagneau, whom he somewhat sharply criticised, Dr. Javal recommended a whole set of new laws and regulations, which would also subvert the existing order of things, in a different manner though. As may be expected, Dr. Lagneau replied and defended his pet projects, when Dr. Rochard closed the discussion by remarking that preparing bills or enacting laws is scarcely the business of the Academy of Medicine. Besides, a tax on bachelors is hardly practicable, and it would be unjust to discriminate against childless couples, already distressed enough at the sight of a barren household. Hygiene and sanitation are the means within the province of the Academy. "We cannot increase natality, but we may decrease mortality which levies so high a tribute on infantile population. While it is true a limited progeny is often voluntary, the same is also too often due to natural causes. It is of no use disguising facts, barrenness is on the increase. If we produce but few children, we must manage to save of what we get all we can. And here is a wide field for both the legislator and the sanitarian. Infantile mortality is much too large; there is no reason why France should be less saving of her children than more prolific nations. Professional abortionists must be prosecuted without mercy. Unwedded mothers must be protected. Foundlings must be tenderly cared for. And, lastly, typhoid fever and other preventable diseases must not be allowed to decimate our young men in the army and our population in the cities and villages."

Dr. Rochard is no doubt right. However, the same partial census also supplies other curious information. From the marriage statistics for 1889 it appears that English (and American) men and women are of all foreigners most ir

clined to marry their French neighbors. Indeed, figures say they like a Gallic mate four times better than one of their own nation. The Germans and Belgians show a like preference for natives, but to a lesser extent,—that is, about two to one. With them, as with Anglo-Saxons, the rule holds good for both sexes. Italians behave differently, the men taking French wives seven times out of ten, and women taking a native husband only four times out of ten. Spaniards are more clannish. We find among them five French wives and four husbands out of ten. They mostly marry among themselves. A strange fact is the very small number of unions between Spaniards and Italians,—namely, only seven of each sex out of a grand total of over four thousand marriages in 1889 for the two nationalities. As to the Swiss, they hold very broad ideas; they divide their favors almost equally between all nations, with a preference for French natives, and next for their own.

An important contribution to our knowledge of the nature of blood has been made by M. Maurice Arthus, of the Sorbonne physiological laboratory, and Dr. Calixte Pagès. To place the cart before the horses, their practical conclusions are that "(1) blood will not coagulate unless it contain soluble calcium or strontium compounds; (2) all salts apt to precipitate lime, such as soluble oxalates, fluorides, and stearates, will prevent coagulation; (3) calcium is an integrant part of the fibrin molecule." Now, to briefly relate the experiments serving as a basis for the foregoing conclusions, the first series of trials with potassium, sodium, and ammonium oxalates and fluorides showed that one per mille of the oxalates and one and a half the same quantity of fluorides are sufficient, when added to blood, pure or diluted, to prevent coagulation under all circumstances. The mixture, of course, will on keeping spoil more or less speedily, according to temperature and other conditions, but remain liquid. Sodium oleate, or common soap, both good lime precipitants, were found to act likewise. Only the proportion necessary was one per cent., as might have been expected from the high chemical equivalents of stearic and fatty acids in general. Another series of experiments proved that oxalates and fluorides will even stop incipient coagulation, provided the blood be either diluted with water, or under such conditions as not to be liable to sudden coagulation. Moreover, oxalates, fluorides, and stearates will precipitate neither fibrinogen, paraglobulin, or fibrin ferment, all of which substances have hitherto been considered not only necessary but also sufficient to insure blood coagulation. And, lastly, the most conclusive series of experiments proved that if to blood previously rendered non-coagulable by the presence of one per mille of an oxalate as little as one per mille of calcium chloride be added, the liquid will coagulate within six or eight minutes at a temperature of 20° to 30° C. (68° to 86° F.), and form clots in every way resembling ordinary clotted blood. It is an interesting addition to our knowledge of the physiological properties of strontium, alluded to in the THERAPEUTIC GAZETTE (September, 1890, page 639), that of all the alkaline earths strontium alone is apt to replace lime under the same circumstances. Strontium chloride, like calcium chloride, will render "lime-less" blood coagulable again, while barium and magnesium salts will not. Indeed, with a few more observations in the same line, we shall soon reach the conclusion that strontium could without disadvantage replace calcium in the animal economy. From the foregoing experiments the investigators have also deducted the following theoretical conclusion: "Under the influence of fibrin ferment, and in the presence of soluble calcium compounds, fibrinogen undergoes a chemical transformation resulting in the production of an insoluble calcium combination,—namely, fibrin." This explanation, they hope, will reconcile the hitherto irreconcilable theories of both Al. Schmidt and Hammarsten, who have also worked in the same field.

Drs. Cadeac and Meunier, continuing their investigations on the various essential oils used for flavoring cordials and bitters, have communicated to the Paris Society of Biology the results of their experience with the oil of sweet flag,—*Calamus aromaticus*. In doses of 25 centigrammes (4 grains) injected into the veins of 5 to 6 kilo (11 to 13¼ pounds) dogs it was found to cause epileptic fits. The effects may be quite as violent as those obtained with oils of hyssop, rosemary, or wormwood, but they appear less abruptly. When the access is over, the animal takes some time before recovering its mental equilibrium. Its temper will be quite altered. A gentle dog will become ugly and cross, unmindful of its master, and ready to snarl and bite on the slightest provocation. Larger doses—1.80 grammes to 16 kilos, or 2.80 grammes to 30 or 35 kilos—will produce a succession of epileptiform attacks, ending in tetanus and death. The oil is eliminated very slowly, and death generally proceeds from nervous exhaustion. With smaller doses—namely, 70 centigrammes to 20 kilos (11

grains to 44 pounds—only nervous tremors and jerks were observed, but no epileptic attacks. When the dose still decreases, for instance, 50 centigrammes to 13 or 17 kilos (8 grains to 29 or 37 pounds), the effect is a wholesome psychomotor excitement. The animals are more lively, inclined to play, run, and leap, and at the same time more nervous and excitable. Such were the different modes of action, according to doses, observed with intravenous injections of oil of calamus. The following appear to be the conclusions deducible therefrom: 1. Oil of calamus aromaticus in large doses has powerful epileptic and tetanic properties. 2. In smaller doses it is only a stimulant, increasing strength without causing ebriety. 3. It always impairs the affectionate disposition of animals, and renders them unruly and stubborn. 4. It has a special affinity for the nervous system; hence it forms an excellent nervine, but may become dangerous in cordials containing excessive quantities.

The *Cassia alata*, called by George Don, F.L.S., winged-podded cassia, and in the French tropical colonies known as tetter-plant (*herbe-aux-dartres*), has been tried with great success in the military hospital at Noumea, New Caledonia. Navy Pharmacist-Principal Porte, who directed the experiments, having in 1879 found chrysophanic acid in the plant, managed to procure some seeds, and to grow them in New Caledonia, where army physicians Bonnafy, Le Dantec, Legrand, and others employed preparations of *Cassia alata* in many cases of obstinate herpetic affections under treatment at the Noumea Hospital. Eczema of the face, simple herpes, intertrigo, herpes circinata, and chronic eczema, all very tenacious diseases in warm climates, and some of long standing, were invariably cured after application of a *Cassia alata* ointment devised by Pharmacist-Principal Porte. Having noticed that chrysophanic acid is insoluble in water, sparingly so in alcohol, but quite soluble in acetic acid, he made an acetic tincture, and then an extract, of the fresh leaf, as follows:

> *Cassia alata* leaves, 100 parts;
> Crystallizable acetic acid, 150 parts;
> Distilled water, 300 parts.

Bruise the leaves, exhaust them by maceration, press out the liquid, and evaporate it on a water-bath to the consistence of an extract. The average yield is thirty-seven per cent.,—a very large one. The ointment is to be made by mixing the extract with four times its weight of lanolin. In mild cases, or with more delicate patients, half the quantity of extract will suffice. It may be interesting to add that for his work on *Cassia alata* M. Porte has been rewarded by the official thanks of the Minister published in the *Journal Officiel*.

The British consul at Canton, China, recently caused quite a sensation by stating that during the past year some eighty thousand pounds of human hair, worth about sixteen hundred dollars, were shipped through that port to Europe. At the same time he remarked that most of the hair in question coming from beggars, criminals, and victims of contagious diseases, it was a wonder to him how elegant European women can consent to wear such appendages. But, so far as France is concerned, an unexpected reply has been returned to the Anglo-Chinese sanitarian. Chinese hair, it seems, is too coarse for French beauties, and in consequence not wanted for female adornment. It is merely used for the helmets of cavalry officers. For privates in the dragoon or cuirassier regiments a flowing mane of ordinary horsehair is considered the right thing. But officers need something a little better and finer, and Chinese hair has been found to just answer the purpose.

TRADE-MARKED AND PROPRIETARY MEDICINES.

To the Editor of the THERAPEUTIC GAZETTE:

DEAR SIR:—Physicians connected with large hospitals on this continent (and I presume that my statement may be applicable to the hospital chiefs of your country) are often solicited by the proprietors of certain new medicines, and especially of such as have become the possession of a monopoly, and have been patented, to consider the claims of their particular preparation, make trials of it in their hospital practice, and give the results to the world. I am not aware that the enterprising pharmaceutical firm ever goes so far as to accompany their request by a *cash presentation* to defray the expenses of such trials, but the offer to furnish ample supplies gratuitously of the medicament is sufficiently common. While I do not know that there is anything contrary to social or medical ethics in such offer, or in its acceptance, I have myself always fought shy of these pharmaceutical agents, nor have I accepted their proferred supplies, from fear that the reception, without pay or charge, of a quantity of an expensive drug for use in my hospital, might somehow bias my judgment as a clinical experimenter. Judge, therefore, of my indignation on re-

ceiving intimation from an American source that my conduct had been different in the case of antipyrin. I am told that this is a mere rumor, the parties from which this rumor emanated being unknown to my correspondent, but I think it none the less important that my life-long principles in matters of this kind should be known to my friends across the water. So firm have I been in refusing all offers of supplies of new drugs for hospital experimentation, that the inventors and proprietors of new preparations have long since ceased to visit me.

I opine that there is not in all France a more determined opponent of the patented pharmaceutical specialties than I am and have been. As for antipyrin, I have always fought the monopoly which makes this really valuable antipyretic and analgesic so costly to us all, and in the discussions before the Academy, and in the report which I had the honor to draw up, I indicated how we might escape this *draconian* tyranny and abuse by substituting for fanciful appellations of these drugs, such as antipyrin, antifebrin, phenacetin, exalgine, etc., the scientific, or rather chemical, names of these substances. I have had some little part in researches made with the view of discovering new analgesics and new hypnotics, but I would consider it a reprehensible and criminal act to obtain a government patent or a monopoly of anything which I might be instrumental in discovering of real value to suffering humanity.

It is much to be desired that such truly excellent remedies as antipyrin and sulphonal might be manufactured under a new name by some enterprising pharmacist, and I, for one, would engage never to use the trademark name or preparation again. Let medical men be united in opposing monopolies, as well as all *duties*, where valuable drugs are concerned. I remain, dear sir,

Your obedient servant,

DUJARDIN-BEAUMETZ.

PARIS, FRANCE, September 24, 1890.

RARE COMPLICATION OF WHOOPING-COUGH.

To the Editor of the THERAPEUTIC GAZETTE:

DEAR SIR:—In the THERAPEUTIC GAZETTE, xiv. 567, Dr. W. P. Ellis reports a case of a "rare complication of whooping-cough." It appears that this case has awakened considerable interest, and justly so. From the brief description given I would infer that the tumor was due to air. From the fact that it came on "during a paroxysm of coughing," "no discoloration of the skin," "no pain, and no inflammation disappearing after death," all favor this conclusion. In 1883, while attending Dr. Edward Henoch's lectures on diseases of children, in the Royal Charité of Berlin, I saw a case of whooping-cough complicated with rupture of pulmonary tissue, which was followed by subcutaneous emphysema of the neck, face, trunk, upper and lower extremities; indeed the entire body appeared to be inflated with air; slight fever was present, with extreme dyspnœa, that greatly intensified the suffering of the little patient, which, however, proved fatal in twenty hours.

H. F. SLIFER, M.D.

NORTH WALES, PA.

Notes and Queries.

THE FUTURE OF PHARMACY.

On the eve of the publication of the addendum to the British Pharmacopœia, which will take official cognizance of what is already well known, it is very interesting to find that pharmacists have recently been receiving rather a large share of advice from several members of our profession. Some of it has been directly addressed to them, and some has been in the form of criticism of the ready reception so eagerly afforded to new drugs. The character of the advice seems to be conflicting and perplexing, and yet, although detached sentences appear to show a difference of opinion, we believe that on careful investigation the divergence will be found to be much less than even the speakers themselves would suspect. In all the three addresses we propose noticing here, vigorous onslaught is made upon new remedies,—one, because they are often secret and so partake of quackery; another, because the rage for new drugs is absolutely fatal to accuracy of observation and precision in treatment; and the third, because no sooner is a new drug placed on the market than everybody rushes to try it. Mr. Lawson Tait's amusing life-history of "rubbishin" was no doubt very little overdrawn, but his conclusions against new drugs as the "great burden" of our lives scarcely seem to be justified by his fanciful sketch. Dr. Broadbent, while more guarded in his statements, was no less severe upon the rage for new drugs which seemed

to have taken possession of the profession. "When the drugs were recommended simply by an advertising chemist, it was humiliating to see their statements command general acceptance." In spite of Dr. Broadbent's cautious reservations, his remarks and those of Mr. Lawson Tait might well be understood to discountenance progress, and to discourage all original work outside the comparatively limited circle of familiar remedies. On the other hand, Sir E. H. Sieveking, in his address at the opening of the School of Pharmacy, spoke quite as emphatically upon the need of greater energy, perseverance, and research. He remarked that within the last few years we had been indebted to the continent for numerous remedies which have been employed largely and beneficially in this country, but have not been discovered here. Curiously enough, he instanced one—chloral—which had previously fallen under the ban of Mr. Lawson Tait; Sir E. H. Sieveking considered it a matter for regret and for serious consideration that so much of the progress of modern pharmacy should reach us from foreign sources. If they attend to such advice at all, pharmacists might well hesitate how to frame a satisfactory line of conduct. They are urged forward by Sir E. H. Sieveking; they are told practically to work in the old grooves or not to work at all by Mr. Lawson Tait. Is all research to be paralyzed from the dread of its results receiving the appellation of "rubbishin," or are eager investigations to be continued on the lines followed abroad? If pharmacists be induced to follow Sir E. H. Sieveking's advice, may they not lay themselves open to the charge of being "advertising chemists" when their results are published, and when they attempt to reap the reward of their labors? In our department, headed "Pharmacology and Therapeutics," we publish the experience of practitioners and observers in all parts of the world with respect to the action of well-known drugs, and endeavor to afford aid to our readers in forming an estimate of the value of remedies recently introduced.

The difficulty seems to reside chiefly in a misapprehension of the meaning of terms. In speaking of the *value* of any new drug, it is well to distinguish carefully between its therapeutic and its financial value. The latter may be, and indeed mostly is, dependent upon certain purely business considerations, such as the constant presentation of an easily remembered name in attractive advertisements, but the therapeutic value of a remedy is not necessarily antagonistic to its financial value. In other words, although advertisement may push into notoriety many relatively worthless substances, it cannot detract from the activity of the many possessed of valuable therapeutic properties. Whether it does more harm than good is another matter. Certainly many medical men instinctively withhold their confidence from new remedies, and the more they are pressed upon their attention the more they feel the dread of being entrapped by another fashionable craze. Still, to take only those mentioned by Sir E. H. Sieveking,—chloral, antipyrin and its congeners, and sulphonal,—it may be safely asserted that these have survived their period of probation, but it is none the less true that each in turn has run the risk of being designated "rubbishin." The truth appears to be that undue haste in the publication of results, and undue eagerness to claim priority, will always discredit original research in any direction, and this truism applies most particularly to new remedies. An energetic worker in original fields makes what he believes to be a genuine discovery, and the new substance is immediately dubbed *anti-something*. Subsequent impartial investigations show, perhaps, that the original claim is as incorrect as the hundred other uses to which the remedy has been hastily applied, and then its fate is sealed. False to its name, false to the statements of the many who have welcomed it purely as a novelty which could be utilized for their own especial hobbies, it is speedily relegated to the limbo of useless matters. Frequently, we believe, this fate is undeserved, and might have been averted by a little more circumspection. There is, no doubt, a disinclination to reinvestigate a substance which has had its day of fashion. It is cast aside in favor of newer combinations, and its properties may have to wait a long time for recognition. Nearly every pharmacopœia has shown indications of curious waves of fashion, of prejudice, and of tardy justice. Remedies pass in and out of the official circle almost mysteriously; the exit, often the result of a temporary lack of appreciation, no more proves the uselessness of a drug than the frequently prolonged hesitation about its admission. It is simply set aside for further work, like a candidate referred to his studies, and if it is of any real worth it will go on presenting itself at intervals of varying length until the knowledge of its power to do good work appears beyond dispute.

The whole question of the future of phar-

macy lies in a nutshell. New remedies are not to be decried simply because they are new; they are not necessarily useless because they are advertised, but they frequently receive less than their meed of attention, simply and solely because the first statements concerning their powers are made prematurely. Although for a moment Dr. Broadbent spoke so strongly of the advertising chemist, the whole tenor of his argument is in entire sympathy with Sir E. H. Sieveking's wish that the future of research should be more firmly based upon slower methods. It is only by investigations which must be both painstaking and prolonged, and by careful consideration of every possible source of error before publication, that pharmaceutical results can leave little room for sarcasm and none for scorn.—*Lancet*, October 18, 1890.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

The meeting of the Mississippi Valley Medical Association at Louisville, October 8–10, was largely attended and successful in every particular. The President, Dr. Jos. M. Matthews, of Louisville, had been ill for some weeks from blood-poisoning, the effects of a wound received some time since, and was able to preside only at a part of the sessions. The Vice-President, Dr. C. R. Early, of Ridgway, Pa., filled the chair in his absence. Dr. Matthews made a short address of welcome, expressing the disappointment he felt at not being able to meet with them in session and socially, and bidding all welcome to the best the Falls City could give them. The chairman of the Committee of Arrangements, Dr. I. N. Bloom, was a host in himself, and Dr. Matthews's illness threw double work on his burdened shoulders. An addition to his family arrived two days before the meeting, and he had not had time to assure himself whether he was receiving congratulations for a boy or a girl. The programme of eighty papers was completed in the three days by rigid adherence to the limit rule for readers and discussion. Dr. John A. Wyeth's address on the evening of the first day delighted a large audience. He graduated at the University of Louisville, was on his native heath, and was the recipient of numerous social honors. A reception for the members of the Mississippi Valley Medical Association and ladies, with the local profession, was given by Drs. Yandell and Roberts, and was highly enjoyable. The visiting ladies were taken to the Blind Asylum, and entertained by songs, gymnastic exercises, etc., by the pupils. A large reception at the Galt House called forth the famed beautiful Kentucky women, and a number of bachelor doctors cast longing looks behind them when they left the city and its belles. This reception was followed by a banquet given the visiting members by the Louisville members with invited guests. The feast of body and reason lasted far "beyant the 'twal," and the two hundred and forty guests departed feeling that it was good to have been there. The officers for the coming year are: President, Dr. C. H. Hughes, St. Louis; First Vice President, Dr. J. H. Hollister, Chicago; Second Vice-President, Dr. S. S. Thorn, Toledo; Secretary, Dr. E. S. McKee, Cincinnati; Treasurer, Dr. C. F. McGahan, Chattanooga; Chairman of Committee of Arrangements, Dr. I. N. Love, St. Louis. The next meeting will be held in St. Louis the third week in October, 1891.

URIC ACID IN THE BLOOD.

SIR A. GARROD showed some years ago that during an attack of gout the blood contained appreciable quantities of uric acid. Abeles and Saloman have corroborated these experiments. In the *Deutsche Medicinische Wochenschrift*, No. 23, of this year, Professor von Jaksch, of Prague, whose valuable researches on the blood are well known, publishes an interesting paper on the occurrence of uric acid in the vital stream. He considers mainly two points,—1. Whether uric acid takes a prominent part in the "acid intoxication" described by himself, Peiper, and others. 2. Whether it is only in attacks of gout that uric acid occurs in the blood. The blood was tested by Salkowski's and Ludwig's method, which Jaksch considers to be very accurate. The total number of patients on whom observations were made was one hundred and five. In nine cases of perfectly healthy individuals no trace of uric acid could be detected, neither were there any xanthin derivatives present. In nervous affections, such as tabes, multiple sclerosis, polyneuritis, and tumors of the brain, the results were also negative; on the other hand, in such cases, the blood frequently contained compounds of xanthin, especially hypo xanthin. Nine of the one hundred and five cases were patients suffering from enteric

fever, but uric acid was never found in the blood; in one case, however, in which the temperature had fallen small quantities were discovered. In a case of irregular intermittent fever the results were analogous; during the febrile attack no uric acid could be detected, but in the intervals it was present. Diseases of the liver, intestinal tract, and stomach only led to "uricacidæmia" (as Jaksch calls this condition), when there was profound anæmia. Uric acid was found in the blood in cases of heart-disease in which there was much cyanosis. In affections of the lungs and pleura it was most frequently detected in emphysema, and when there was pleural exudation. It occurred constantly and in considerable quantities during the febrile stage of pneumonia (five cases). In acute rheumatism it was never found. Fair quantities were present in renal disease,—the different forms of nephritis, amyloid degeneration, etc. Considerable amounts were also observed in cases of marked anæmia, both primary and secondary. With regard to the second question, therefore, Jaksch comes to the conclusion that uricacidæmia is not pathognomonic of gout; as to the first question, he concluded that uric acid is not often found in febrile "acid intoxication," but that it may be so. It is important to notice that all morbid processes leading to overloading of the blood with carbonic acid also produce this condition, and the greater the cyanosis the more uric acid is found. Therefore, it would seem that we must ascribe the presence of uric acid to a disturbance of the interchange of gases in the lungs, such as occurs so largely in pneumonia. How are we to reconcile with this statement the occurrence of uric acid in the blood in nephritis and anæmia? To this question Jaksch answers that in both these diseases the red blood-corpuscles, whose duty it is to further oxidize uric acid, are deficient He concludes by making the general statement that uricacidæmia is due to disorders of the red blood-corpuscles, the vehicles by which oxygen is carried.—*Lancet*, September 27, 1890.

A NEW THEORY OF SEA-SICKNESS.

According to M. ROCHET, who accepts the view that sick-sickness is due to cerebral anæmia, this condition is induced by the disorder brought into muscular contractions by the organism not being accustomed to such sudden movements as those on board ship. He insists upon the enormous capacity of the reservoir formed by the muscular and perimuscular venous system, and the considerable *rôle* of tonicity and voluntary or reflex muscular contractions in emptying it, also the predominance of reflex over voluntary muscular actions in preserving one's equilibrium in most movements. In the movements of a vessel the relation of muscular tonicity and suppression of reflex movements result in a considerable increase in the capacity of the peripheric reservoir, and the consequence is to intensify the resulting cerebral anæmia. Hence it is that the downward motion of the ship is the most trying, and one can easily understand the benefit of a horizontal position, compression of the abdomen, and fixing the body in a rigid position. Many young children escape sea-sickness because the education of the reflexes is not yet accomplished. On solid ground their equilibrium is so uncertain that they often reel as much as older people do on board ship. M. Rochet discountenances recourse to anæsthetics or soothing drugs, but looks rather to muscular excitants, and, above all, to voluntary movements, which afford a compensation for the absent reflex movements. He accordingly recommends strychnine, ergot, and gaseous drinks. We give this advice for what it is worth, but it does not strike one as more promising than the thousand and one theories and treatments that have preceded it.—*Medical Press and Circular*, October 15, 1890.

KERATIN.

DRS. UNNA and BEIERSDORFF recommend that pills coated with keratin, or capsules made of this substance, should be employed when drugs are prescribed which irritate the gastric mucous membrane, and the administration of which is liable to induce vomiting such as preparations of digitalis and squills, salicylic acid, or iodide of iron; also when substances are given which neutralize the acidity of the stomach, or which in any way impair its activity, such as acetate of lead, tannin, nitrate of silver, alkalis, etc. An outer coating of keratin is also desirable when prescribing drugs that are required to act on the intestinal mucous membrane without affecting that of the stomach, such as extract of logwood, tannin, or the salts of aluminium. Finally, keratin is most valuable when substances are given with the object of destroying worms, but which, if introduced in

the ordinary way into the stomach, undergo absorption to such an extent that they are liable to set up alarming symptoms, while at the same time their vermicidal action is reduced. Keratin is obtained by treating shavings of buffalo-horn with ether, alcohol, and an acid. Its special property is that it is insoluble in the contents of the stomach, but readily so in those of the intestine after the pancreatic juice has entered.—*Lancet*, October 18, 1890.

ATROPINE AS AN ANTIDOTE TO POTASSIUM CYANIDE.

In the *Internationale Klinische Rundschau* for August 31, 1890, a case is alluded to of a man who attempted to commit suicide by taking a considerable (?) quantity of a solution of potassium cyanide. To render the result more fatal he also drank at the same time a solution of atropine. He became unconscious, and was then taken to the clinic in Halle, where, it was stated, that nothing was done for him, but he, nevertheless, the next day was entirely well.

Of course, there being no accurate details as to the quantity of these different substances taken largely detracts from the importance of this case, as pointing to an antagonism between atropine and potassium cyanide. We would infer that the amounts taken were insufficient to produce death, since the asserted antagonism of atropine was disproved by the experiments of Keen, Boehm, and Knie.

BONDUCIN AS A FEBRIFUGE.

The oily fruit of *Guilandila bonducella* and of *Cæsalpinia bonduc*, known as the sugar-pea of Guiana, contains a bitter, resinous principle, which may be extracted by alcohol. When the alcoholic extract is treated with chloroform and the chloroform then shaken up with water, the lower layer, which then separates, contains this bitter principle, which, after evaporation and washing by means of petroleum-ether, may be obtained in the form of a white, bitter powder, soluble in alcohol, chloroform, acetone, aceticacid, and the fixed and volatile oils. It is but slightly soluble in ether and bisulphide of carbon; it is almost insoluble in water and petroleum-ether.

This bitter principle, to which the name of bonducin has been given, is soluble in hydrochloric acid, in which it assumes a red color. With sulphuric acid a red color is also produced, especially when a drop of perchloride of iron has been added.

According to the *Journal de Médecine de Paris* for October 12, 1890, this substance has been used with success in intermittent fever in the dose of from 1½ to 3 grains. The powder of the seeds may be administered in doses of 15 to 30 grains daily.

CASE OF STRYCHNINE-POISONING.

In the *North Carolina Medical Journal* for September, 1890, DR. W. H. COBB states that he was recently called to attend a woman, aged 42 years, who had accidentally taken two capsules containing strychnine, presumably about two grains in each, which had been obtained about sixteen months previously to poison a dog.

When Dr. Cobb reached the case the woman was then in violent tetanic convulsions. ¼ grain of morphine and $\frac{1}{100}$ grain of atropine were given to control tetanic contractions, which soon became milder, but were very painful. 20 grains of ipecac were given, and, no emesis following, in a few minutes salt and warm water were given, followed by 10 grains of ipecac, after which emesis was produced. Emesis was produced a second time by a dose of mustard in warm water, and a second hypodermic injection of morphine and atropine was given. Immediately on the first appearance of the symptoms of poisoning, the woman's husband had commenced the administration to her of lard in half-cupful quantities until about a pint had been taken. As the case recovered, it is probable that delayed absorption from coating of the stomach with lard was largely concerned in the production of the result, since it is stated that the capsules were very old, and were, therefore, probably insoluble.

A TWO HUNDRED THOUSAND DOLLAR LIBEL SUIT.

Suit has been entered by WILLIAM RADAM, manufacturer of Radam's Microbe Killer, against the *Druggists' Circular*, of New York, for two hundred thousand dollars damages, the largest amount, so far as heard from, that was ever asked for in a libel suit of this kind.

The pleadings show that the action is brought to recover damages claimed to have been done the business of the plaintiff by an article published in the *Druggists' Cir-*

cular for September, 1889. This article gave the result of an analysis of the Microbe Killer, made by DR. R. G. ECCLES, a prominent chemist of Brooklyn, who stated that an identical preparation could be made by the following formula:

Oil of vitriol (impure), ʒiv;
Muriatic acid (impure), ʒi;
Red wine, about ℥i;
Well- or spring-water, Oviii.

This mixture, it was alleged, could be made at a cost of less than five cents per gallon, for which Radam charged three dollars.

It was further alleged that, while, when properly used, sulphuric acid, the principal constituent of the Microbe Killer, was a valuable medicine, it was, when taken without due caution or advice, a slow but certain cumulative poison; and the theories advanced by Radam, as to the causes of diseases and the proper method of treatment, were alleged to be totally erroneous. Colonel Robert G. Ingersoll, the famous lecturer, is the counsel for the plaintiff.

The *Druggists' Circular*, which is published at 72 William Street, New York, expresses a desire to hear of any case in which unfavorable results have followed the administration of the Microbe Killer, or of any other fact that would be interesting under the circumstances. They claim to have published this analysis without malice, and with the sole intention of protecting the public from the loss of their health and money by the use of a dangerous nostrum.

THE PRESENCE OF THE DIPLOCOCCUS OF PNEUMONIA IN THE MILK OF A WOMAN AFFECTED WITH PNEUMONIA.

At a recent meeting of the Academie de Médecine de Turin (*Bulletin Général de Thérapeutique*, October 15, 1890), PROFESSOR BOZZOLO announced that on the 7th of June last a woman who had been nursing for six months came under his care suffering from an attack of left croupous pneumonia, which was followed shortly by endocarditis, and, finally, by pneumonia of the right side with delayed resolution. Cultures of the milk obtained from this patient were made in bouillon, and abundant development of the diplococcus of pneumonia were determined both by the morphological characters of the micro organism and by the inoculation experiment. The child, however, did not show any evidences of ill health.

This observation of Professor Bozzolo seems to confirm the idea generally held that the diplococcus, like numerous other bacilli, may pass into the secretions, and thus confirms from a clinical point of view the experiments of Joa and Bordon Uffreduzzi, who found this micro-organism in the milk and in the blood of infected rabbits.

SCARLATINA WITHOUT PYREXIA.

DR. WERTHEIMER mentions in the *Münchener Medicinische Wochenschrift* a case of scarlatina occurring in a child 7 years of age, in whom, though the eruption was well marked, and the tonsils and tongue presented their characteristic appearance, there was absolutely no pyrexia either morning or evening, the highest point reached being 99.6° F. The pulse, however, was rapid, being from 116 to 120 during the first three days. There was no albuminuria; desquamation began on the ninth day. Dr. Wertheimer also mentions a second case occurring in a child of about the same age, where, though all the distinctive signs of scarlatina were present, the only time there was any abnormal temperature was the evening of the second day; then it was 100.6°. Here, too, there was marked rapidity of pulse, and he suggests that this is probably an important sign in diagnosticating the rare cases of apyrexial scarlatina. His opinion is confirmed by Dr. Beetz, who immediately after the appearance of the article reported two other apyrexial cases where the pulse was also very rapid.—*Lancet*, October 4, 1890.

STERILIZED MILK.

So called "sterilized milk" by no means always deserves its name, in some cases being much fuller of germs than ordinary unboiled milk fresh from the cow. HERR KOHLMANN, of Leipsic, on subjecting two specimens of milk sold as sterilized to examination, found that one of them really was so, no germs being discoverable; while the other specimen contained 350,000 germs per cubic centimetre. For the purpose of comparison other examinations were made, and it was found that a sample of fresh milk bought in the street contained about 160,000 germs per cubic centimetre,—that is to say, less than half

the number in the second sample of so-called sterilized milk. Milk boiled in the kitchen contained 158 germs per cubic centimetre; distilled water kept in an open vessel, 430; water-works water, 1064; and water from the Hofbrunnen, 12,000. Herr Kohlmann suggests that the failure of whatever process was used to sterilize the milk may have been due either to water having been mixed with the milk before the process was commenced, or perhaps to too long a time having been allowed to elapse between milking and sterilizing. This last point exercises a very great effect, as is shown by Freudenreich's observations. He found that milk which when received contained only 9300 germs to the cubic centimetre, after being kept for three hours at 60° F., contained 10,000; after six hours, 250,000; and, after twenty-four hours, no less than 5,700,000. It would, therefore, appear that our knowledge of the conditions under which milk may be really sterilized is at present somewhat insufficient, and that reports of the results of the feeding of infants with milk which is reputed to be sterilized must always be received with a good deal of scepticism unless specimens of the milk have been frequently examined by a competent person.—*Lancet*, October 18, 1890.

A NEW EXCIPIENT.

According to the *Journ. de Conn. Méd.*, August 7, M. ADAM, a Parisian pharmacist, has produced a resin soap "which may be recommended as constituting a new pharmaceutical excipient." The formula is as follows:

Resin, 100 parts;
Carbonate of potassium, 30 parts;
Water, 300 parts.

The components are heated to the boiling-point, when an effervescence takes place, the product being finished when the disengagement of gas ceases. The heat may be continued, however, until any desired consistency is obtained. The product may be made hard, if necessary. This soap is soluble in water, and does not give a precipitate with marine salt. It may be used as an excipient for a great many drugs, and it has the advantage of being less costly than either vaseline or cerate. It should not be used with metallic salts, owing to the liability to double decomposition. Resin soap works well with mercury, and mixes freely with camphor, naphthol, sulphide of carbon, tar, etc. It does not make a homogeneous product with the oil of cade. It appears to have been serviceable thus far in the preparation of some of the remedies used by veterinary surgeons.—*American Journal of Pharmacy*, October, 1890.

ÆTHYL BROMIDUM.

Three cases of poisoning from æthyl bromidum have recently been reported from Berlin, where it seems to be much used as an anæsthetic for dental as well as for small surgical operations, and DR. MITTENZWEIGS warns people against its employment. Some years back æthyl bromidum was used in this country extensively, as it has the advantage of acting quickly and rarely producing sickness, but the number of fatalities attending its use has led to its loss of popularity. As far as we know, it is a drug but little, if at all, employed by English dental surgeons.—*Lancet*, September 20, 1890.

CHLOROFORM AND PHTHISIS.

DR. SAMUEL O. L. POTTER thinks that he has discovered a cure for tuberculosis in the almost continuous inhalation of chloroform. He says that, as a result of some experiments, he feels convinced that this bacillus may be destroyed, and its victims saved, by the continued use of chloroform inhalation, systematically carried on, day by day, by means of suitable apparatus, and with the care necessary to prevent injurious results or accidental poisoning. "There is no need for the anæsthetic action being induced; but the inhalation can be kept up continuously for several hours daily, and maintained short of general anæsthesia."—*New York Medical Record*, November 1, 1890.

TREATMENT OF INGROWN NAIL.

DR. PÜRCKHAUER moistens the surface of the diseased nail with a lukewarm forty per cent. solution of caustic potash, and then scrapes off the softened upper layers with a sharp-edged piece of glass. After a second application of the potash solution, the scraping is continued until the nail is as thin as a sheet of paper. It is then lifted up from the soft parts with forceps, and the diseased parts are excised. The operation, which is unattended with hemorrhage, has been uniformly successful in the author's hands.—*International Journal of Surgery*, October, 1890.

—THE—

Therapeutic Gazette.

Whole Series, Vol. XIV. | DETROIT, MICH., PHILADELPHIA, PA., | December 15, 1890. | Third Series, Vol. VI. No. 12.

CONTENTS.

Original Communications.

PAGE

New Therapeutic Agencies. By Professor Dujardin-Beaumetz 793
The Detrimental Effects of Over-Exertion in Pulmonary Phthisis. By Karl von Ruck, M.D. 803
On the Treatment of Rheumatic Fever with the Compound Tincture of Cinchona. By C. C. P. Clark, M.D. 808
The Dietetic Treatment of Epilepsy. By John Ferguson, M.A., M.D., S.R.C.P., L.F.P.S 810
On the Use of Nitrogenized Food in Fever and Wasting Diseases. By Frank Woodbury, A.M., M.D. 811

Leading Articles.

Etiological Therapeutics 816
Antimonials 817
The Physiological Action of the Bromide of Rubidium and Ammonium 818
The Cure of Tuberculosis 820
An Objectionable Rule of the Philadelphia Board of Health 820

Reports on Therapeutic Progress.

Acute Pleurisy and Acute Rheumatism 815
Further Communications in Regard to the Remedy against Tuberculosis 821

PAGE

Dr. J. Roussel's Treatment of Phthisis 826
Preventive Inoculation in Tuberculosis 828
The Curability of Acute Phthisis 833
The Treatment of Hæmoptysis 835
Guaiacum as a Purgative 836
Therapeutics of Gastric Dyspepsia 837
A Case of Tetanus treated with Eserine 837
The Treatment of Whooping-Cough by Vaccination 838
The Relation of Naso-Pharyngeal Disease to Catarrh of the Middle Ear 838
The Treatment of Leg Ulcers by the Italian Autoplastic Method 839
The Therapeutics of Exophthalmic Goitre 839
The Pharmacology of Chloralamide 840
Treatment of Inflammation of the Vermiform Appendix 841
Transplantation of Mucous Membrane 841
Phosphorus and Rickets 842
The Treatment of Infantile Diarrhœa with Sterilized Milk 842
Hydatid Tumors 843
The Respiratory Functions in High Elevations 843
Some New Clinical Experiments with Diuretin 844
The Treatment of Inflammation of the External Auditory Meatus 845
Cerebral Contusion 846

PAGE

The Treatment of Purulent and Infectious Pleurisies by Intrapleural Injections 846
The Treatment of Biliary Colic 847
Some Objections to Cocaine in Genito-Urinary Surgery 847
The Rôle of the Parasite in Skin-Disease 848

Reviews 850

Correspondence.

Berlin Letter 852
Berlin Letter 855
Paris Letter 858
Can the Corpuscles of the Blood be seen by the Naked Eye unassisted? 860

Notes and Queries.

Seventh International Congress of Hygiene and Demography 861
Should Morphine and Atropine be given before Chloroform Inhalation? 862
The Coagulation of the Blood 863
"If You go to Colorado You can never return" 863
Dr. Koch's Investigations upon the Treatment of Tuberculosis 864

Original Communications.

*NEW THERAPEUTIC AGENCIES.**

LECTURE VIII.—NEW MODES OF TREATING PULMONARY TUBERCULOSIS.†

BY PROFESSOR DUJARDIN-BEAUMETZ,‡ PARIS, FRANCE.

GENTLEMEN:—The critical study of the new modes of treating pulmonary tuberculosis, to which I now invite your attention, is one of the most difficult of subjects; therefore, at the onset of this lecture, I claim your indulgence.

I do not intend a complete study of these new therapeutic methods, and shall not repeat what I have said elsewhere in the THERAPEUTIC GAZETTE and in the last edition of my work on "Clinical Therapeutics."§ I shall only dwell on facts which have been brought before the profession during the last three years.

Since Koch, confirming the discovery of Villemin, has shown us in the tubercle bacillus the virulent agent of tuberculosis, numerous

* A second series of "New Medications," published in 1887.

† From advance sheets, revised by the author (translated by E. P. Hurd, M.D.). Lectures delivered in Cochin Hospital, Paris, France.

‡ Member of the Academy of Medicine, Physician to the Cochin Hospital, Paris, France.

§ THERAPEUTIC GAZETTE, November 15, 1887; Dujardin-Beaumetz, "Leçons de Clinique Thérapeutique," t. ii. Part III.

attempts of therapeutists have been directed against this micro-organism, and the endeavor has been made to establish on scientific bases the antibacillary treatment of phthisis. Have experimenters succeeded? Unhappily no, and if undoubted progress has been made since the discovery of Koch, it is only in the line of hygienic therapeutics and prophylactic hygiene.

Must we, then, despair? By no means; for at the very moment when I utter these words, Koch's announcement has been made that, by a method still, for sufficient reasons, kept secret, he has been able to render animals refractory to tuberculosis. Nay, more, experiments now going on in the hospitals of Berlin under Koch's supervision seem to give promise of most important results in the suppression of phthisis in the human subject by a method of attenuated vaccine similar, it may be, to the processes already applied by Grancher and Hippolyte Martin to animals to render them refractory to tubercle inoculations.*

With regard to the practical results of experiments on animals, I know very well that it is not always safe from laboratory experiments to form conclusions as to what will benefit the human subject under inherited or acquired disease; and it may be objected to the researches of Grancher and Martin, that, from the point of view of the treatment of tuberculosis, what we want is not merely to find some means of preventing animals from becoming subjects of experimental tuberculosis, but also of arresting the development of tuberculous lesions when the bacillus has sojourned for a certain time in the economy.

It would be a great mistake, nevertheless, to make light of such researches. We can always derive from them precious knowledge, and it may be affirmed, thanks to the ardor with which these researches are pursued in all the great scientific centres, that, guided by experimental medicine, and basing ourselves on incontestable bacteriological labors, we shall be able some day, not only to render persons predisposed to tuberculosis refractory to this disease, but even to arrest the development of Koch's bacillus. In such investigations I have personally a keen interest, and you can follow in my laboratory a series of similar experiments undertaken on animals by my pupil, Dr. Stackler.

But, to come back to our subject, clinical experimenters have proposed a multitude of medicaments which seem to have a special microbicide action on the tubercle bacillus; and, in order to reach the pulmonary parenchyma more directly, they have generally abandoned the method of introduction by the alimentary canal for that of the subcutaneous tissues and the lungs.

In my "New Medications," under the head of "New Pulmonary Medications," I have already spoken of the attempts made to introduce certain therapeutic agents by the rectum; this method is to-day completely abandoned. The direct injections into the pulmonary parenchyma have undergone the same fate, and it does not seem that this method will ever again come into vogue, notwithstanding the attempts lately made by Fernet.†

It is not the same with inhalations, and we have seen successively sulphurous acid and hydrofluoric acid employed.

As for the first of these gases, the experiments which I have made in my hospital, and which have been reported in the thesis of my pupil Darieux,‡ have shown that, if these ininhalations sometimes give satisfactory results, amelioration is rare, and we never see the bacillus disappear from the sputa. Hence, the facts adduced by Sollaud, Auriol, and Balbaud are quite exceptional.§

My pupil Villy undertook to practise subcutaneous injections of sulphurous acid dissolved in liquid vaseline. These injections did not produce any beneficial effect.‖

The hopes which had been raised by the first experimental researches made in my hospital wards by Chevy with hydrofluoric acid¶ have not been realized; and, despite the vogue which this treatment had after the important communication of Herard to the Academy, to-day these hydrofluoric inhala-

* *Vide* Grancher and Hippolyte Martin, in *Acad. des Sciences*, August 10, 1890.

† Fernet, "On Parenchymatous Injections of Naphthol in the Treatment of Pulmonary Tuberculosis" (*Bull. et. Mém. de la Soc. de Thérapeutique*, 1889).

‡ Darieux, "Treatment of Pulmonary Tuberculosis by Inhalations and Hypodermic Injections of Sulphurous Acid" (*Thèse de Paris*, 1887).

§ Auriol, "Treatment of Pulmonary Phthisis by Inhalations of Sulphurous Acid;" Sollaud, "Two Cases of Pulmonary Phthisis treated with Success by Prolonged Sojourn in an Atmosphere of Sulphurous Acid" (*Archives de Médecine Navale*, 1887); Balbaud, "On Sulphurous Acid in Tuberculosis" (*Bull. de Thér.*, 1887, t. cxiii. p. 276).

‖ Villy, "Hypodermic Injections of Sulphurous Acid" (*Bull. de Thér.*, September 15, 1887).

¶ Chevy, "On Hydrofluoric Acid and its Therapeutic Applications" (*Thèse de Paris*, 1885).

tions are completely abandoned. In fact, as you have seen in my wards, where I have had little cabins constructed for the purpose, if hydrofluoric inhalations have produced amelioration in certain cases, it has proved itself powerless in the immense majority of instances to arrest the progress of tuberculosis.

In Russia, Kremianski has constructed very ingenious inhalers, by the means of which air is made to pass through aniline solutions. He adds to this treatment the internal administration of aniline, and combats the febrile symptoms by acetanilide. He has reported several cases where aniline, which is a powerful antiseptic, has given favorable results. These trials have not been repeated in France, but you will find in the published monographs of Albitzky, Goliskowsky, Gretchinsky, and others data which plead in favor of the method.*

I must remark, *à propos* of aniline and its derivatives, that in his communication to the Berlin Congress in 1890, Koch mentioned, among the substances which oppose the culture of bacilli *in vitro*, fuchsin, gentian violet, methylene blue, quinoline yellow, and auramine, all coloring substances derived from aniline. To this list he adds naphthilamin-β, paratoluidin, and xylidin; lastly, of pre-eminent efficacy, cyanide of gold, which arrests the development of tubercle bacilli in a solution 1 : 2,000,000. Unfortunately, when we pass from the domain of the laboratory to that of clinical medicine, this microbicide action is no longer seen, and it is to be feared that this may be the case with Professor Kremianski's method.

Struck with the confessedly incomplete results which have been obtained by the inhalations of different substances reported to be microbicide, Weigert, an American physician, abandoning medicinal agents, conceived the idea that hot air, which is considered as one of the most active destructive agents of micro-organisms, might be utilized in the treatment of pulmonary phthisis, and he constructed an apparatus which heats the air to a temperature the highest point of which is 250° F.

In proposing this method he was but following out a line of practice which had been before adopted by Halter and Krüll, of Gustrow, who had employed hot air in the treatment of tuberculosis. Halter got his idea from the fact that the workers in lime-kilns seemed to be exempt from phthisis.

The experiments made in my hospital wards, as well as in the different countries of Europe, have shown how illusory was the hope entertained by Weigert.

In Russia, Korkourioff has shown that Weigert's method not only does not cure tuberculosis, but that it even favors the more rapid progress of the disease. This is the conclusion also arrived at by Dr. Trudeau, of Saranac Lake. Besides other American physicians, Cary and G. Thomson have also reported bad results from the method of Weigert. Cervello, who has also made numerous hospital experiments with the hot-air treatment in Italy, has come to the same conclusions, and the same may be said of Nijkamp, of Leyden.

Taylor has shown by thermometric examinations of pulmonary cavities, that air, heated up to 200° F. in Weigert's apparatus, did not raise the temperature of the air in the lungs more than half a degree. But we are indebted to an Italian physician (Alberto Riva, of Parma) for the most numerous and precise experimental investigations relative to the temperature of the air in the interior of the throat and pulmonary parenchyma, and he has shown that the temperature of the intrapulmonary air never exceeds 40° C.

On the other hand, in a series of researches which I have undertaken with the aid of my laboratory chief, Dr. Dubief, I have shown by experiments on animals that it is necessary, in order to destroy the virulence of the bacilli of tuberculosis in sputa, to exceed at least a temperature of 80° C. At 70° C. we find this virulence still existing.

So, then, from the point of view of the destruction of the micro-organisms of the lungs, clinical experiments and experimental researches show that we can base no hope on

* Albitzky, "Sur un Cas favorable du Traitement de la Phtisie chez ma Femme" (*Revue Médicale, Meditsinskoyé Obozrénie* [en russe], 1886, et *Lancet*, 1888, No. 9); Goliskowsky, "Sur quelques Cas de Prophylaxie et du Traitement de la Phtisie" ([en russe] *Wiestnik Obchestmennoy Guiguiéni*, Avril, 1889), publié séparément avec l'article du Professeur Kremiansky,—"Sur l'Emploi du fer dans le Traitement de la Phtisie" (en russe); Gretchinsky, "La Médication par l'Aniline des Maladies chroniques des Organes respiratoires chez les Prisonniers" (*Médecine russe, Rousskaya Méditsine*, 1889, Nos. 22, 23 [en russe]); Ouréwitch, "Guérison de la Tuberculose en Trois Mois" (*Rousskaya Méditsine*, 1889, No. 48); Zislinsky, "Sur la Nécessité d'Examen microscopique fréquent des Crachats" (*Méditsinskoyé Obozrénie*, 1889, No. 5); Polétika, "Traitement de Phtisiques par les Inhalations d'Aniline" (Société des médecins russes de Saint-Pétersbourg, 26 Octobre, 1889. Cité en abrégé par le docteur Wladislowlew, dans le *Wratch*, 1889, No. 44).

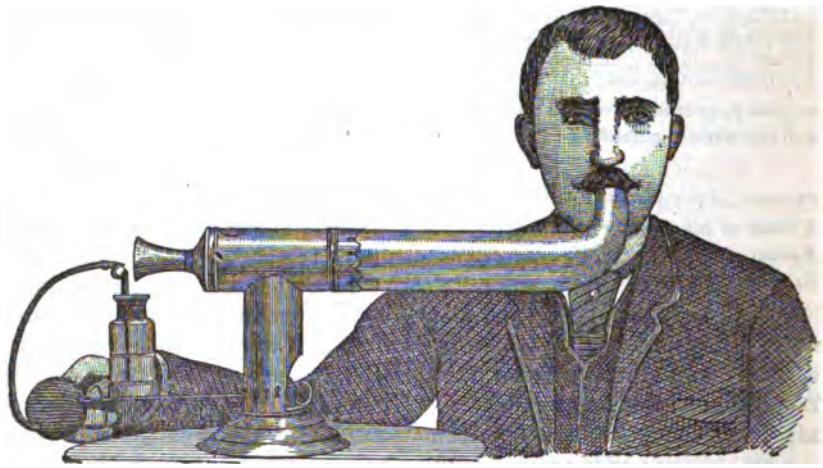
the employment of these inhalations of superheated air.*

Detances, who has made himself in Paris the advocate of the *azotized method of treatment*, maintains that it is beneficial in tuberculosis. Without daring to affirm that nitrogen has a direct microbicide action, he considers this azotized medication as one of the most powerful means for raising the forces of patients and modifying the culture soil. He employs the azotized water in drink and in pulverizations, as well as in inhalations of nitrogen gas. You will find in the thesis of Dr. Mazery† several cases reported where, under the influence of this treatment, undoubted improvement took place.

Quite another method has been recommended by Stormer, of Christiana, for the introduction of medicinal substances into the lungs. It is under the form of extremely fine particles that these substances are made to penetrate the lungs, and to accomplish this he pulverizes or sprays certain medicinal agents in solution in a room whose temperature is raised considerably above the normal (from 105° to 110° C.). Under the influence of this high temperature, the water of the solution evaporates, and the medicament escapes from the apparatus in a dry and very fine powder.

The manner of carrying out this mode of treatment is represented by the two apparatuses which I place before you; one may serve for two patients; the other, which is larger, can be used for only one (Fig. 1).

FIG. 1.



Recently Stormer has modified his apparatus, and has given it a much more simple form, as you can see by the model I here show you. Stormer is but carrying out the intrapulmonary mode of treatment instituted by Jacobelli, of Naples, with his atmiometer (see THERAPEUTIC GAZETTE, 1887, page 729).

Whatever may be the fineness of the medicinal powders, they really penetrate but a little ways into the lungs (when they get there at all), and it is impossible to admit, supposing the most favorable conditions, that they can act with sufficient power to destroy *in situ* the bacilli of tuberculosis. I adopt, then, the conclusion of Aubeau and Ley, who first made known Stormer's apparatus in France, that we can utilize this method in order rapidly to introduce certain medicinal substances in the case of individuals whose stomachs are irritable and reject medicines.

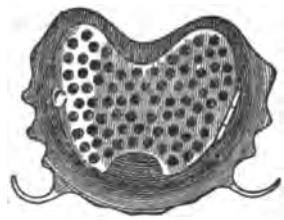
It is on quite another basis that the inhaler of Dr. Pradère de Moine is established. He places on the roof of the mouth an apparatus very similar to a dental plate, and fixed like the latter, containing a closed cavity, in which are introduced the medicinal sub-

* Ley, "A New Apparatus destined for the Treatment of Phthisis" (*Bull. de Thèr.*, t. cxviii. p. 193); Korkounoff, "Treatment of Tuberculosis by Hot Air, after Weigert's Method" (*Wratch*, No. 43, 1889); Trudeau, "Inhalations of Hot Air in the Treatment of Pulmonary Phthisis" (*Chicago Medical Journal*, October 5, 1889); Cervello, "Inhalations of Hot Air with Weigert's Appara'us" (*La Sicilié Medica*, 1889); Nijkamp, *Centralblatt für Laryngologie*, January, 1890; Taylor, Clinical Society of London, May 23, 1890; Riva, "Treatment of Pulmonary Tuberculosis by Weigert's Apparatus" (*Il Morgagni*, May, 1890); Thomson, "Inutility of Hot Air in the Treatment of Phthisis" (*Med. Record*, April 26, 1890, p. 457); Cary, "Treatment of Pulmonary Tuberculosis by Hot Air" (*Brooklyn Med. Journal*, 1890).

† Mazery, "Nitrogen in Mineral Waters" (*Thèse de Paris*, 1890).

stances (Fig. 2). These substances are in the form of flat pastilles, like the cavity in

FIG. 2.



which they are placed. The following is one of the formulæ of these pastilles:

℞ Phenic acid, 30 grammes;
Thymic acid, 10 grammes;
Essence of myrbane, 10 grammes;
Balsam of tolu, 50 grammes;
Saccharin, 20 grammes. M.

Add sugar, gum tragacanth, laminaria, and licorice powder enough to make a thousand pastilles.

FORMULA No. 2.

℞ Chromic acid, 2 grammes;
Essence of myrbane, 20 grammes;
Balsam of tolu, 50 grammes;
Saccharin, 20 grammes. M.

The above is sufficient for a thousand pastilles.

It takes three or four hours for these pastilles to dissolve, and patients renew them three or four times a day.

Dr. Pradère has made application of his system to several patients in my hospital, who have derived a real benefit therefrom, but we have not observed a real cure. Moreover, the method is still under trial, so that we cannot yet pronounce definitely concerning its value.

Onimus uses for an inhaler that lamp today employed as a disinfectant, and which operates on the principle of the transmission of alcohol vapors over platinum black kept incandescent by these vapors. In this case ozone is produced, which rapidly destroys the bad odors of the room in which this lamp is placed. By mixing with the alcohol essences of thyme, lemon, and eucalyptus we obtain an antiseptic action, which may possibly destroy the virulence of the tubercle bacillus.

Onimus affirms that, by causing the products which are set free from this lamp to pass, by the aid of an aspirator, through tuberculous sputa kept in Liebig's tubes, the virulence of these sputa is absolutely destroyed. He thinks this method useful, not in promoting the cure of tuberculosis, but in palliating the deep lesions of the pulmonary parenchyma.*

* Onimus, "On the Destruction of the Virus of Tuberculosis by Certain Essences made to Evaporate by Platinum Black" (*Acad. des Sciences*, October 6, 1890).

So, then, after having passed in review all these new processes of antiseptic inhalation, you will remark that no one of them has given positive results, and confirmed the expectations of their authors. Have we been any more successful with the subcutaneous injections? This is what we shall now examine.

Of all the balsamic or other substances employed in pulmonary tuberculosis, one only seems to hold its ground amid the multitude of pretended specifics that have had their day and gone into oblivion. I refer to creosote.

Already, at the time of my journey to Russia, I had been struck by the results obtained by Affanassiew from the employment of creosote in large doses administered by the stomach. But it is so rare in tuberculous patients to find stomachs sufficiently tolerant to support doses of creosote, equalling and even exceeding one gramme, that this method is little practicable. But we can easily introduce this medicament under the skin, and it is here that the researches and experiments of Gimbert have taught us something.

We know how much we owe to Gimbert for the application of creosote to the therapeutics of tuberculosis; we may almost say that he is the founder of this treatment. For many years he has utilized both the gastric and hypodermic methods for the administration of this medicine, and it was under his guidance that I began those clinical trials which are still continued to-day in my hospital wards.

At the hospital I make use only of the subcutaneous method. I have used the Gimbert injector, and another apparatus which I have had constructed, but whose results are less satisfying. It is sufficient to have a hypodermic instrument similar to the primitive Pravaz syringe which may hold fifteen to twenty grammes of the medicinal solution.

Burluraux, who has made much use of creosote in large doses in the military hospitals, utilizes the pressure of the liquid. A reservoir, placed at a suitable height, communicates, by means of a rubber tube, with a perforated needle, which is introduced under the tissues, and gradually and very slowly, for several hours, the creosote solution penetrates into the cellular tissue.

The solution to employ is the following:

Pure creosote, 10 grammes;
Pure olive oil (sterilized), 150 grammes. M.

I call your attention to the necessity of having the olive oil as pure as possible and sterilized. This sterilization is easily effected to-day in the bacteriological stoves, and it suffices to raise the temperature of the liquid above 120° C.

To practise these injections, you must always take great care, before introducing the liquid, to see that it is perfectly pure, and for this purpose you need only to let fall upon a porcelain plate a few drops of the solution by means of the instrument which you are going to use. These drops should be perfectly limpid, and clear of all the impurities resulting from rusting of the stop-cocks of the apparatus, or a foul condition of the piston or the needle.

When once you are sure of the purity of the solution and the cleanliness of your needle, you will proceed to the injection. The best place, in my judgment, is at the posterior part of the thorax, near the spine of the scapula. At this point the cellular tissue is very loose, and may without inconvenience receive great quantities of the liquid. You pinch up a fold of skin, and at the base of this fold and parallel to it you introduce the needle. The injection should be made very slowly; then, when it is finished, you withdraw the needle and place your finger over the orifice to prevent escape of the liquid.

When made with all the precautions which I have indicated, these injections never cause any local mischief, and we have yet to see the first abscess produced as a result of these subcutaneous injections practised in our wards, where they are generally left to students. Moreover, these injections are but slightly painful, and are generally welcomed by the patients, who find them a real comfort and benefit.

In a space of time, which varies from five to ten minutes, the breath of the patients takes on the characteristic odor of creosote, and this odor persists for twelve hours. These injections are made every second day.

Under their influence we see produced a diminution of the expectoration, a return of the appetite, disappearance of the night sweats. In the cases which I have had in the hospital under my observation, I have never witnessed a cure, and this is due chiefly to the fact that it is but a short time that we have had our patients subjected to this treatment. But Gimbert, who has exercised an extreme reserve in the publication of his hospital cases,—a reserve which we cannot too much approve of when the treatment of tuberculosis is concerned,—has, at the same time, affirmed that he has witnessed in a certain number of cases the definitive cure of tuberculous consumption under the influence of these subcutaneous injections of creosote.

Is this method applicable to all cases? Assuredly not. There are contraindications which it is necessary to know; one of the first is fever. In all cases where the temperature is continuously high, these injections do more harm than good. It is the same with hæmoptysis. In a word, the active congestions of the lung, whatever may be their cause, constitute a formal contraindication, which is easy to be understood when you reflect that the elimination of creosote tends to augment the pulmonary hyperæmia. It is, then, in the slow, apyretic forms that there is the most chance of success.

As you have just seen, the therapeutics proper of diseases of the lungs, despite the earnest labor spent in this direction, has not greatly progressed, and, with the exception perhaps of creosote, all the other microbicide medicaments directed against the tubercle bacillus have been attended with far more failures than successes, whether used by inhalations or subcutaneously.

We must, then, wait for the results of experiments undertaken in the different laboratories before we shall know whether science is in possession of a method or a medicament which can destroy the virulent agent of phthisis in patients affected with tuberculosis.

But, on the other hand, prophylactic hygiene has made great advances. Knowing the contagious agent of the disease and its mode of transmission, we can to-day establish on scientific bases the prophylaxis of this disease. We can even do more; we can apply these same data, derived from hygienic therapeutics, to the treatment and cure of tuberculosis.

I shall have, then, to set before you successively the prophylaxis of tuberculosis and the hygienic treatment of this disease, and shall try to indicate the progress that has been effected during the last few years.

I shall be brief under the first head, for you will find this subject pretty thoroughly treated in my "Prophylactic Hygiene." I desire only to sum up the principal points of this subject.

Quite vehemently discussed at the recent Congress of Tuberculosis, which was held in 1888, these questions of prophylaxis came up again before the Academy in 1889, and ob-

tained the unanimous vote of the Academy on all the points of which I am going to speak.

The contagious agent of tuberculosis is the sputum. We may say that it is almost the only agent of propagation of the disease. I say *only*, for authorities have pointed to cases where the sperm was said to be the agent of infection. But such cases are very questionable, and they are extremely rare. Others have also alleged the food to be a possible cause of contagion; to this point I shall refer again.

Apart from particles of dried sputa, which may float about in the air, the atmosphere does not contain tubercle bacilli, and in this regard the experiments of Giboux and those of Tappeiner seem absolutely demonstrative.

It is, then, to the destruction of these sputa that hygienists have for the most part applied themselves. It is, therefore, necessary whenever and wherever tuberculous patients are congregated in the same dwelling or apartment, or whenever you are called upon to attend tuberculous patients, to exact of them that they shall spit into special receptacles containing saw dust or sand moistened by disinfectant mixtures, or even simply by water. Then every evening it should be made a duty to destroy by fire, or by steam under pressure, the contents of these spittoons.

Iscovesco has even recommended (and it is a clever notion) to have the spittoons made of pasteboard, and to see that they are destroyed every day along with the sputa.

To save the products of expectoration and to destroy them is not sufficient. The room which the patient has occupied, the garments which he has worn, the bed-clothes which have been in contact with him, must be disinfected. This is a requirement which cannot be with safety neglected, and you will find in medical annals a great number of facts showing that individuals have become tuberculous by inhabiting a room or tenement long occupied by a phthisical patient. All the rules of disinfection, which I have indicated in my "Prophylactic Hygiene,"* are applicable, and you should see that they are rigidly enforced.

This necessity of the disinfection of rooms occupied by the tuberculous makes it also incumbent on us to see that the appointments of these rooms are of a proper kind. Peter long since rightly raised his voice against the hangings and tapestries which encumber these apartments. To-day it is a matter of absolute necessity to do away with these hangings, and the walls of the room, the floor, and the mattings which cover the floor should be of such a character as to allow frequent washing. Here there is a great reformation to be accomplished, especially in the hotels and lodging-places for invalids, to-day so numerous on the borders of the Riviera, and the changes called for must more or less modify profoundly the conditions of comfort to which phthisical patients have been habituated. We shall presently see that a modification quite as great should be effected in the aeration of the rooms occupied by the consumptive.

As for the question of aliments as a cause of the contagion of tuberculosis, this has given rise to vehement discussions, and by turn parties have incriminated both milk and meat. As for milk, it seems to be demonstrated, experimentally at least, that it may transmit tuberculosis; and Puech has rendered guinea-pigs tuberculous by feeding them on the milk of a tuberculous cow. Ebstein, Hort, and Cohnheim have made similar experiments, and have arrived at identical results.

Milk, then, which contains tubercle bacilli may cause tuberculosis; but, as I have already said in my "Prophylactic Hygiene," cows which give tuberculous milk are extremely rare; and, in view of this rareness, I do not believe it to be necessary always to subject to ebullition the milk which is administered to children; boiling, in fact, renders the milk more indigestible. Moreover, we can avoid this danger of the propagation of tuberculosis by using the milk of animals refractory to tuberculosis, such as the ass and the goat, or even those sterilized milks which are found to-day in commerce, and of which an important manufactory is established in Normandy, at Neufchâtel-en-Bray.

As for meats, I shall not repeat what I have already said in my "Prophylactic Hygiene." In view of the contradictory results obtained by the most conscientious experimenters (Nocard, for instance), in view of the known destructive action of the gastric juice on the tubercle bacillus, I am of opinion that there is not yet sufficient warrant for prohibiting the use of raw meat and underdone meats, on the pretence that there is danger of transmitting tuberculosis in this way, and the commission of the Academy has accepted the

* Therapeutic Gazette, 1888–89.

reservation which Germain Sée and myself formulated in this regard.

Such, in brief, are the most important points in the prophylaxis of tuberculosis, and I come now to the subject of the open-air treatment, which has revolutionized in many respects the treatment of pulmonary affections.

This treatment comprehends several factors. First, it is essential that the patient shall spend as much time as possible in the open air; then, to keep him in a relative repose, he should be in a proper sanitarium. We will successively examine each of these points.

The importance of fresh air in the treatment of the tuberculous has only of late been sufficiently brought to light; and, although Raulin, in the eighteenth century, taught in very precise terms the necessity of making consumptive patients live in rooms with the windows wide open, it must be admitted that this precept has not been followed, and what proves this is the difficulty which our clinical leaders find in convincing the public of the importance of the complete aeration of the rooms of the tuberculous. Peter, who has made such vehement opposition to the curtains and hangings which encumber the rooms of the phthisical, is one of the most ardent advocates of the thorough ventilation of these sick-rooms.

Open the works of Jaccoud, G. Sée, Cornil, and Herard, and you will find this matter of abundant aeration for the tuberculous strongly and repeatedly insisted upon.

But all these injunctions and precepts were anticipated many years ago by an Englishman, who has done much for the treatment of tuberculosis. I allude to Bennett, who, in his "Treatise on Pulmonary Phthisis" (1874), indicated how the tuberculous ought to live in the open air.

"The consumptive," he says, "ought to live day and night in an atmosphere kept constantly pure by a current of air made to traverse the room from a window more or less open all the time to a fireplace or chimney, also kept open."

But, notwithstanding all these precepts, the open-air treatment of phthisis was little in favor of the profession, and we are indebted to Dettweiler* for having again urged its importance and proved its utility, so that at the present day this treatment is commending itself more and more.

Dettweiller, as you know, superintends, at Falkenstein, in the Taunus, a few hours' ride from Frankfort-on-the-Main, a sanitarium, built at an altitude of four hundred and forty metres, where he subjects his patients to a treatment based almost exclusively on the use of fresh air, and in several communications he has made known the results of his practice, which are certainly remarkable.

I shall not take up your time with a full description of this mode of treatment. I have stated it fully in a report which I presented to the Academy on the occasion of a communication by Dr. Nicaise on this subject, and showed how fully I believe in this fresh-air cure.

But, dating from this epoch in the therapeutics of tuberculosis, numerous researches undertaken along this line have made known to us facts with which we were previously unacquainted. I refer to such as the temperature of a room, with windows open night and day.

Onimus, on the one hand, in showing us that the temperature in the night-time on the Mediterranean coast, between Hyères and Menton, instead of falling, continues to rise, and that where a fall takes place, it is at the day-dawn; and Nicaise, on the other hand, in showing that a room, with its windows constantly open, keeps a mean temperature of 12° to 14° C., even when the temperature outside is below zero, have put in clear light the possibility under certain given conditions of sojourning in a room with windows open without inconvenience or harm.†

The remarkable experience of Dettweiller, which has to do with a large number of patients, shows even that in climates less mild than the borders of the Riviera, we may obtain the same result. At Falkenstein, in fact, the patients, from eight o'clock in the morning till ten o'clock at night, remain exposed under a veranda largely open and protected only by curtains against the rain, the wind, or the snow; and, in the evening, when these patients go to their rooms, they pass the night in an apartment whose windows are open, and the proportion of relative cures in this establishment is estimated at 24.2 per cent. accord-

* Dettweiller, "Die Therapie der Phthisis," etc. Wiesbaden, 1887.

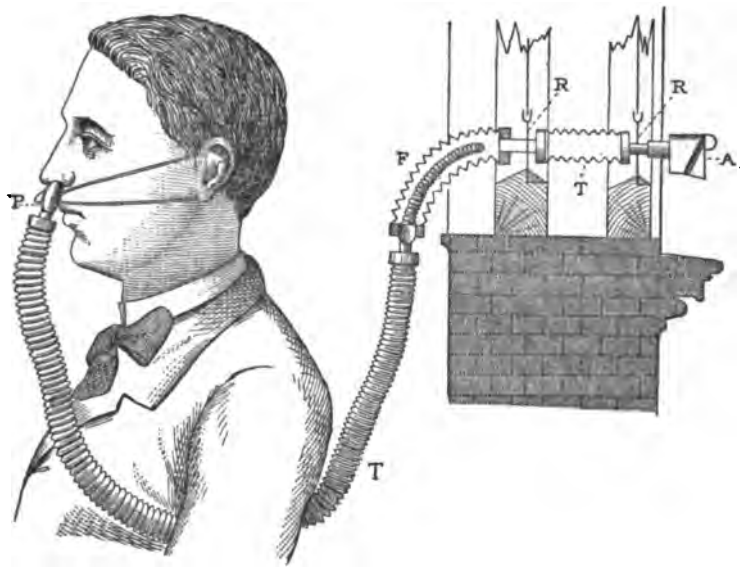
† Onimus, "Researches on the Thermometric Variations from the Point of View of Hygiene" (*Bull. de Thér.*, 1890, t. cxviii. p. 300); Nicaise, "On Permanent Aeration by Open Windows" (ibid., p. 241); Dujardin-Beaumetz, "Report to the Academy of Medicine," February 25, 1890.

ing to Dettweiller, and at twenty-seven per cent. according to Meissen.

In our hospitals certain physicians have attempted to make their tuberculous patients live in rooms with open windows, and I may call your attention to trials made by Debove, Constantin Paul, and my own at the hospital Cochin, where I have made use of a window quite ingeniously constructed by Eyraud.

Physicians imbued with these ideas have contrived numerous processes to render respiration in open air more efficacious, without endangering patients, and the most ingenious apparatus which has been constructed for this purpose is that which I here show you, and which you have seen in operation in my wards (Fig. 3). A slender tube of parch-

FIG. 3.



ment-paper brings the nares of the patient into communication with the outer air. The inflowing air (at *A*) is protected from the wind and dust by clapper valves very ingeniously arranged. Before reaching the respiratory organs of the patient, the air traverses a layer of wadding (*F*), which still further filters it. As for the nasal end, it is kept in place by two elastics, which pass around the ears. A valve, with which the mouth of the tube is furnished, enables the expired air to escape directly to the outside. This same distal end contains in its inside a piece of blotting paper, which may be impregnated with soluble substances, such as creosote, phenic acid, eucalyptol, etc.

Patients who are furnished with this apparatus seem to derive a real benefit from it, and they sleep without experiencing any inconvenience from the presence of the tube in the nose.

It would be well, by the way, to mould the extremity of the tube to the nares which it is designed to penetrate, so that it may adapt itself perfectly to that cavity, and not permit the passage of the air of the room between the nasal walls and the tube.

I am experimenting at the present time with the apparatus of Wolff* in my hospital wards, and patients wear this apparatus without inconvenience, and are highly pleased with its results.

In any event, whether you make use of the apparatus, or, what is much more simple, the open-window treatment, you should see that the blinds are shut, the windows being opened in such a way that no draughts can come upon the patient. The patient must, of course, be well covered and kept perfectly warm in his bed.

The second point to which I desire to call your attention is the necessity of repose. In his interesting work, "On the Hygienic Treatment of Tuberculosis," Daremberg dwells much on this subject of rest in the treatment of phthisis; in his estimation, it is the best means to diminish pulmonary congestions. Once, he says, physicians were in the habit of saying to patients, "Go South and take constant exercise." Now they are more in

* Wolff was the originator of this apparatus, which was shown to the Congress of Physicians of Southern Germany in 1885.

the habit of advising them to go South and keep quiet in bed. Dettweiller, moreover, urges his patients to rest, and he keeps them on their backs the greater part of the day, allowing them only occasional promenades in the park which surrounds his establishment, and this only when there is a real improvement in their condition.

Daremberg provides the means of rest for his patients by furnishing them with little osier basket-cots, to which he adds the invalid long-chair.* I cannot too much recommend to you to take a hint from this mode of promoting the comfort of phthisical patients.

Fresh air, rest, and, lastly, alimentation, these are the most important points in this hygienic treatment. I shall say little of alimentation and superalimentation; you know my views on this subject, and that I have been one of the most earnest advocates of superalimentation in tuberculosis. I may say that every consumptive patient who has a good stomach and a healthy digestive apparatus has relatively a good chance for recovery. It is desirable, then, that the patient shall eat abundantly, and I recommend you to advise particularly fatty foods, such as sardines in oil, tunny-fish in oil, sour herring in oil, butter, pork, the fat of geese, pork-butcher's meat, caviar, cod-liver oil, sweet cream, etc.

I would not advise an exclusively azotized diet, and I am much in the habit of recommending vegetables and starchy foods. On the other hand, it is necessary to be very moderate in the use of alcohol, and here I differ entirely from Dettweiller. Dettweiller gives much alcohol to his patients, thus following the practice instituted thirty years ago or more by Furster, of Montpellier, who claimed to have found the means of curing his patients by giving them raw meat and alcohol.

I recognize the fact, however, that in this proscription of alcohol the habits of one's country play a great part, and what the stomachs of us Frenchmen cannot support, may be easily tolerated by the stronger stomachs of the English or Dutch. I prefer much to the distilled liquids the fermented milks, such as koumiss and kéfir.

As for the third point,—*i.e.*, the desirability of providing suitable sanitariums for our patients,—the example set by Dettweiller seems to have borne its fruits, as we see to-day sanitariums established in France. There is, in fact, a considerable advantage, when one undertakes the treatment of tuberculosis, in having the patient before his eyes and under his absolute supervision. Separated from his family, the patient obeys the orders of his physician much better, and it is possible to enforce the rules of a regimen which may seem at first to be too difficult and severe; and, in the discussion which followed the introduction of this subject at the recent Berlin Congress, all the members present seemed to be in favor of these special sanitariums.

Nicaise† has given us some precise directions as to the conditions which a sanitarium for the phthisical shall fulfil, and he has submitted to the Board of Public Charities a carefully-considered plan. The hospital boards are, in fact, to-day favorably disposed towards the establishment in suitable climates of special hospitals, where phthisical patients of the working-class may obtain all the benefits of the open-air treatment hitherto reserved for the rich classes.

I know very well that here in France we are behind the times, and that this word *hospitalisation* will frighten many patients. But if the advantages of this mode of treatment in such a disease as pulmonary phthisis are set forth, I believe that the scruples of the public will be overcome. If, moreover, the proprietors of these sanitariums endeavor to render the sojourn at these places agreeable (what can hardly be said yet of Falkenstein), I believe that we shall have overcome the prejudices which exist relative to these *maisons de santé*.

I speak of the sojourn being agreeable; diversions, in fact, are indispensable to the tuberculous, and, without encouraging a resort to the dissipations of our sea-coast towns, I believe, nevertheless, that healthful amusements and occupations should be provided for our phthisical patients.

And, gentlemen, when we shall have put in practice all the elements of the hygienic treatment of tuberculosis, it will not do to abandon the proper therapeutic management of this disease, and I cannot accept the dictum of Dettweiller that all medicaments are unnecessary. We should none the less treat the bronchitis of some, the diarrhœa of others, the gastric dilatation of this one, the insomnia and nervous agitation of that one; in a word, you will have still to meet all the uncomfort-

* Daremberg, "On the Hygienic Treatment of Tuberculosis" (*Bull. de Thér.*, t. cxviii. p. 529).

† Nicaise, "On the Establishment of a Sanitarium for the Phthisical" (*Bulletin de Thérapeutique*, October 30, 1890).

able symptoms which may arise in the course of a disease so long and so distressing.

In the next lecture I shall take up the treatment of typhoid fever.

---

*THE DETRIMENTAL EFFECTS OF OVER-EXERTION IN PULMONARY PHTHISIS.**

By Karl von Ruck, M.D.,† Asheville, N. C.

INASMUCH as no material benefit can be expected from direct medication in the treatment of pulmonary phthisis, and inasmuch as success must almost entirely depend upon management, which may be called a hygienic and prophylactic therapeutics, I have, in pursuance of the latter, endeavored to study as closely as possible to what extent it is really capable to influence the course of the disease. In so doing I have had the advantage of being able to give my entire attention to the treatment of phthisis for some years past, during which a large number of cases have come under my care, both in private practice and in my special institution.

By the close association with patients it has been possible to observe the conditions under which they appeared to improve and recover, and also the apparent causes which led to reverses and relapses, some of which I had formerly failed to appreciate to their full extent.

It is now my purpose to point out in this communication one of the causes which I have found to exert the greatest influence upon the course of the disease, not only as an obstacle to favorable progress, but frequently leading to reverses, not again recovered from. I refer to physical and mental over-exertions and the thereby induced heart-fatigue.

Having found my patients so uniformly inclined to carry these beyond the limits of benefit and safety, and having seen more or less serious injury to follow such indiscretion most constantly, I am fully convinced that, if this cause alone could be eliminated, the cases of improvement and recovery would be increased in number more than one hundred per cent.; and I ascribe the better results obtained in my institution, as compared with those in private practice, in no small measure to the control in this matter which I am there able to exercise.

The cause for these constant indiscretions on the part of phthisical patients is apparent, and depends upon the fact that the more intelligent understand very well how little they have really to hope from the administration of drugs for the cure of their disease; and that they place their only hope in the out-of-door life and exercise which has been recommended most urgently by their trusted medical adviser; and so anxiously do they cling to this only chance, that any attempted limitation, of one or the other, is looked upon by them as a doubtful measure and with apprehension. Certainly, so long as they are able to follow a contrary course, they are most unwilling to dispense, even only in part, with what is to restore to them their health. They can see no harm in taking in, as much as possible, of the air which will heal their lungs, by forced respiration, carried on purposely or produced by violent exercise, and the latter they feel sure will restore their former strength. This belief on the part of patients is, however, largely due to medical advice, in which out-of-door life is, as a rule, associated with exercise, without proper caution as to the latter; indeed, I know of eminent physicians having advised as much as possible of both, for patients who should at the time have kept their beds.

It is truly pitiful to see such patients literally drag themselves about, exhausting what little strength and recuperative power they may still possess; and more so yet, to see how, under the mistaken association of exercise with the necessary out-of-door life, their wasting becomes more evident from day to day, their steps less secure, their frames more stooping, their stopping "to catch breath" more frequent, and the hectic flush more distinct upon their sunken cheeks, until, finally, from utter exhaustion, or from resulting relapses and complications, they are obliged to keep to their house and room. But even here they resort to in-door gymnastics,—swinging dumb-bells or Indian clubs, or box against an imagined foe in the form of a suspended and inflated rubber air-bag or other contrivance calculated to offer resistance to their self-exhausting blows. Such sights are not uncommon in advanced cases, and the picture is only less painful in cases of the early stage, because there is still a relative appearance of well-being; but, so long as they tax their strength to the utmost in violent exertions, the advanced stage is reached surely and steadily, although the pace may appear less rapid.

---

* Read before the meeting of the American Climatological Association, Denver, Col., September 25, 1890.

† Director Sanitarium for Diseases of Lungs and Throat, Asheville, N. C.

To illustrate the injurious consequences of over-exertion, I append notes from my case-books of a limited number of cases, some from my institution and others from private practice:

CASE I.—Gentleman; in early stage of pulmonary tuberculosis; had been free from fever for over five weeks, during which the pulse-rate had not been recorded above 88; he had gained eleven pounds in flesh, and his general condition, as well as the local state of his lungs, was highly satisfactory. He had thus arrived at a period where, by reason of consciousness of returning health, the tendency to over-exertion is particularly manifest. Contrary to his general directions, he exceeded the amount of exercise allowed him by a walk of over six miles, and returned much fatigued. He had no appetite for his next meal, and the record for the evening shows: Temperature, 100°; pulse, 120; respiration, 28. It was a week before his previous condition was restored, with a loss of five pounds in weight, which it took him a month to regain.

CASE II.—A young lady; in more advanced stage of pulmonary tuberculosis; active symptoms had been absent for four months, during which there was no fever; pulse-rate, 80 to 96; respiration, 22 to 24; appetite good; slight cough, and scant expectoration early in the morning; bacilli were still present in sputum. Her body-weight had reached one hundred and thirty pounds, which was more than she had ever weighed. At this time she ascended a neighboring mountain, and returned hurriedly on account of some fright. She arrived completely tired out, panting for breath, and with a pulse which could hardly be counted,—about 140. Within an hour she expectorated several mouthfuls of clear blood; the pulse continued between 112 and 120 for several weeks. On the third day febrile symptoms, with loss of appetite, appeared. During the month she lost eleven pounds of flesh, and did not regain her previous condition until three months thereafter.

CASE III.—Married lady; tubercular phthisis; had just passed through stage of softening in right upper lobe, but was now improving in all her symptoms, being, however, still forbidden all active exercise, for which massage was substituted. Believing herself strong enough and desirous for a change, she walked down-stairs and upon the piazza, and returned to her room within half an hour, when her temperature had risen 2½° F., and the pulse-rate had increased 30 beats per minute, above any record for three weeks previous. She had no appetite for several days; lost two pounds of flesh that week, whereas the week previous she had shown a gain of three pounds.

CASE IV.—Same patient; about two months later had made much further improvement; fever was now practically absent; pulse, 100; respiration, 18; had been allowed short carriage-rides with apparent benefit. Limited to half an hour on the present occasion, she was out two and a half hours, and also stopped in town for some shopping. She returned so tired that she had to be carried to her room. Chill occurred twenty minutes later; high fever and loss of appetite set in. She relapsed in every way, and never again reached the improvement at which she had arrived before this last ride.

CASE V.—Gentleman; in advanced stage of tubercular phthisis, with large suppurating cavity in right upper lobe. History of repeated hemorrhages, and a severe one just recovered from before his arrival. He resided a week in my institution, during which he gained in flesh; fever and pulse-rate had become less with every day, and his appetite improved correspondingly. Desirous of getting cheaper accommodations, he went to a boarding-house about one mile distant, and returned several times thereafter for advice, always on foot, and each time his pulse-rate was very rapid. In ten days he lost all he had gained, and he again returned to my house. Improvement occurred once more, so much that he believed himself much stronger in every way, and persisted in ascending the mountain in the rear, claiming that he enjoyed it and that it did not hurt him in the least. But upon every occasion I found his pulse-rate increased from 30 to 40 beats, and continuing so for a number of hours later. I was fearful of return of hemorrhage, which I held up to him as a likely occurrence, begging him to desist; but, although he promised, he took another trip without my knowledge. Returning, he died of a violent hemorrhage, a few minutes after he had reached the house, and although at his side almost instantly, there was no time to render him any material aid.

CASE VI.—Gentleman; tubercular phthisis; entire right lung involved, with circumscribed breaking down in upper lobe. A moderate-sized cavity developed in the course of a month, during which time he had to keep his room most of the time. Although

he had much fever and little appetite, he maintained his weight through this period. Improving thereafter rapidly, he was kept out of doors almost continuously, but his exercise was limited to repeated short walks upon the level grounds and to short carriage-rides. He soon began to extend his walks to distances of a mile or two, each time with slight return of fever and increase of cough and expectoration; and, as soon as he had recovered from one reverse, he was sure to produce another by his indomitable desire to take long walks, and no amount of remonstrance seemed to bring him to his senses, until I informed him that, unless he desisted, our relations as physician and patient would cease. At this time he had lost thirteen pounds of flesh, had regular evening fever, with a continuously rapid pulse and profuse expectoration. Henceforward we had no further trouble, and as by returning improvement he recognized his previous folly, he became not only a most exemplary patient, but grew actually timid, so that I had frequently occasion to urge him to increased physical exertion.

Case VII.—Young lady; in beginning of advanced stage of pulmonary tuberculosis, with a tendency to get into trouble if there was an opportunity ever so remote; had many slight relapses from mental and physical over-exertion, but, after many trials, permanent arrest, after a year's residence in my institution, was finally obtained. General health was good and local symptoms were absent, but her endurance seemed still to have a limit. As she was about to be discharged, I gave my consent to horseback exercise, for which she had long besieged me, this time rather to make a test, as she was sure to take it up on her return home. No harm resulted until she exceeded the limit of one hour, and stayed out all forenoon, in company with another patient, and, from what I learned, the ride was rather a wild chase than one for health. It resulted in immediate loss of appetite, sense of fatigue and malaise, and increased pulse-rate for several days, during which she lost several pounds of flesh; menstruation occurred a week in advance, and altogether it delayed her discharge for nearly a month.

Case VIII.—Young lady; in early stage of tubercular phthisis, without active symptoms for a month past; accompanied the patient whose imprudence I have just related. Being an inexperienced rider, she was limited to half an hour, and several such short rides taken previously had appeared beneficial. She was at this time gaining in every respect. She did not come off as easily as her companion. On her return she seemed utterly exhausted. Active symptoms occurred at once, which confined her to her room the greater part of the day for several weeks. Physical examination showed extension of the disease. She lost six pounds of flesh, but made up her relapse, during the month following, when she returned home for the summer.

Case IX.—Gentleman; with tubercular phthisis past the early stage; had resided in my institution several weeks, and had followed advice conscientiously and with benefit, as he was evidently improving. One morning he retired to his room after breakfast, and engaged in letter-writing until noon, by which time he reached a temperature of 102° and a pulse-rate of 130; could not eat his dinner, and felt very tired all the rest of the day. Next morning he expectorated several bloody coagula, and it took a week before he felt as well as before, during which time he lost two pounds in flesh. The week before he relapsed his temperature had only once reached 100° F., and the highest pulse-rate recorded was 96; his appetite had been good, and his weight had increased two pounds. He told me on another occasion that he had not believed the letter-writing to be the cause of his relapse, and therefore tried it once more, and, excepting the bloody expectoration, with almost identical results; and I found in his case that, even a game of cards or prolonged, animated conversation, had a similar, although more transient, effect.

Case X.—(*From private practice.*)—Lady; with chronic pneumonia, in somewhat advanced stage. She believed in plenty of out-of-door life and exercise, and her house physician had so ordered. Under regular horseback exercise on every fine day (and we have on an average about twenty-five in each month), or long walks instead, she had lost twenty-two pounds of weight in the three months she had been in Asheville. Her temperature at the time she consulted me reached 103°, with a pulse of 120 to 130; cough, expectoration, and night-sweats kept her restless at night, and she was very much discouraged. By my advice she restricted her physical exercise to short walks and carriage-rides, and, beyond some treatment for nasal stenosis and pharyngeal catarrh, and the regulation of diet, no other change was made in the management of her

case. After a month she had gained eight pounds, her temperature and pulse-rate were much less, and she expressed herself as feeling better in every way. Three months later she returned home greatly improved, having made a gain of twenty-seven pounds in flesh from the time she came under my care, with disappearance of râles in the affected lung, and almost entire subsidence of cough and expectoration.

CASE XI.—(*From private practice.*)—Lady; with tubercular infiltration of right upper lobe and moderate deposit in left ary-epiglottic fold. She consulted me on account of growing constantly weaker and having much fever, and desired to know of a more suitable climate for her particular case. I found she lived in a boarding-house a mile out of the city, and to get proper exercise and keep up her strength she walked that distance once and often twice a day. I persuaded her to place herself under more favorable conditions, and she entered my institution soon thereafter, where her larynx received some attention, and her exercise and diet were properly regulated. Before she left Asheville—two months later—she had made remarkable improvement, which had begun immediately upon her admission. She could walk several miles without injury, had gained her former weight, was free of fever, and, as she expressed it, felt well enough to go home. Bacilli had been absent in the slight expectoration at the last two examinations made.

CASE XII.—(*From private practice.*).—Gentleman; with tubercular phthisis; entire right lung involved, with slight excavation in upper lobe. Called upon me on account of continuous loss of flesh and strength, and almost daily bloody expectoration. He had lost fourteen pounds in the six weeks since he had left home, had high temperatures and rapid pulse, frequently vomited his food on account of severe cough, and was very much discouraged. His physician had advised him to go to Asheville, let doctors alone, get on a horse and ride through the country if he wanted to save his life! He had followed this advice, and was unwilling to give it up, and although he now only rode three or four hours a day, he was worse after a month, during which he consulted me several times. He had lost six more pounds of flesh, and an acute pleurisy now laid him up and for the time stopped his folly. After partial recovery, he confessed himself willing and ready to do whatever I thought best for him, and he kept his word. Neither had we any further trouble. He improved thereafter steadily, and returned home with his cavity cicatrized, all râles had disappeared, he had gained nine pounds in flesh, cough and expectoration much improved, and without ever again having mounted a horse, but able to walk a mile or two without fatigue or injury.

I could now go on and relate many more such cases, more or less striking, but all showing the same relation of over-exertion to unfavorable progress. In my practice I am now most unwilling to abandon inquiry for this indiscretion, when relapse occurs that is not otherwise referable, and any physician who cares can make similar observations for himself. To do this requires, however, the careful keeping of records, of frequent observations of temperature, pulse-rate, respiration, cough, and expectoration, conditions of digestive organs, body-weight, etc., and also of the local findings of frequently-repeated physical examinations, but these data in private practice are seldom attainable on account of the amount of professional attendance required, which few practitioners are able to give and fewer patients would be able to appreciate.

I have frequently been asked why it is that over-exertion is so particularly harmful in the chronic affections of the respiratory organs, not only by patients, but also by professional friends, and physicians who were my patients, some of them maintaining that sufferers from other chronic diseases are not liable to reverses from similar causes. Less close observers, or such who had perhaps given the matter little attention, have even claimed this for phthisical patients also; and, indeed, the relation is not always so strikingly apparent as to invariably attract attention, especially in private practice, where we see our patients infrequently, and, as a rule, are only called or consulted after the relapse, and when our inquiry (if we make it) elicits only the patient's views in the matter. Frequently we concern ourselves most with the present condition and its relief. Especially in a busy practice, we are apt to pay less attention to inquiries into preventable causes than we really should. At any rate, I freely confess that, before I was interested in this work as I now am, I allowed myself to be satisfied with the explanation that the patient had taken cold, or with the supposed natural downward tendency of the disease, and it seems strange to me now that the great importance of this matter escaped my attention for so many years of my earlier practice. I

know now that relapses from taking cold occur infrequently, and that the supposed downward tendency does, in fact, exist in a diminutive fraction of cases only, in which the disease runs an unusually acute course; but that, on the contrary, there is a strong tendency to repair, improvement, and recovery in the great majority of chronic cases, even in such who are well advanced in the disease.

If phthisical patients are, however, more liable to reverses from over-exertion than others (and closer observation may show such liability to exist in sufferers from other affections also, and is known to exist in certain diseases of the circulatory organs), the accounting seems not difficult; for we find a good explanation in the effect upon the right side of the heart, and the lesser circulation, of any exercise which increases the heart's action and causes a greater demand for aerated blood by the tissues through the systemic circulation. In the presence of obstruction to a free blood-current through the lungs, by reason of impaired expansion, inflammatory and tubercular deposits, connective-tissue proliferation, cicatrization and retraction, accumulated secretions, and other causes for pressure upon the pulmonary vessels; the right heart and large venous channels become thereby overloaded, and lead to exhaustion, more or less permanent, of the heart-muscle, and to subsequent degenerative processes in the muscular fibres.

Even sudden dilatation is liable to occur, and I have witnessed such a case (now to me plainly referable to over-exertion) which proved rapidly fatal.

The non-resistance of lung-tissue to tubercular invasion and extension, if not produced, is certainly favored by nutritive disturbances due to anæmia, and the frequently-associated small and weak heart, and either is apt to be preceded as a primary cause, or attended as a result, by dyspepsia and other gastric complications. Thus a good circulation goes with good digestion, and *vice versa*. We all know how much more favorable the prognosis may be in a given case, where, other things being equal, we have a good heart with good digestion, as compared with one in which all our efforts to secure these advantages prove ineffectual; and we also know how we would avoid any medication or treatment which influences one or the other for the worse as scrupulously as we would maintain it, if it kept the heart and digestive functions at their best.

All my cases show that the heart's action is seriously affected, sometimes for weeks, by such over-exertion, and that with it the appetite is lost and loss of flesh occurs most regularly, and it is, therefore, not to be denied that with frequent repetition of this cause the downward course, formerly attributed to the natural tendency of the disease, is by right referable to mistaken self-management or want of control by the professional attendant in a great many cases, who make unnecessary shipwreck in their journey for health, both at home and at health resorts.

Furthermore, if Metchinkoff's observations continue to stand uncontradicted, and the leucocytes are primarily instrumental in the destruction and removal from the organism of the infecting bacilli, thereby limiting and preventing their extension to healthy tissue, we can see that in tubercular disease any hinderance to the circulation must of necessity diminish the number of the so called phagocytes able to reach the affected part or the line of defence, which for the time being becomes less efficiently guarded, and allows of greater proliferation, activity, and extension of the germs, with the accompanying production of leucomaïnes and inflammatory reaction.

But let the explanation be whatever it may, clinically I have experience which to me admits of no more doubt that heart-fatigue is seriously detrimental to phthisical patients than I have of the known action of opium or chloroform, or of the relation of the bacillus of Koch to tubercular disease; and I only wish that I knew what more I could say or do, or that I might possess sufficient eloquence and power to convince, so as to impress upon the mind and conscience of every physician who advises and treats phthisical patients the great importance of its prevention. And I am equally convinced that if I so succeeded, I should have contributed more to the successful treatment of consumption than has been done by any advance made in this field of therapeutics for many a year past.

Error in the opposite direction is, however, also possible, although not fraught with a corresponding amount of danger; and I certainly do not wish to be understood as under-estimating the benefit of the rational employment of exercise in the management of phthisis, especially in conjunction with out-of-door life. I only protest against its abuse.

Nothing could be further from my mind

than to recommend absolute rest and inactivity, unless during the existence of high fever, acute processes, and certain complications. I believe exercise, short of amounting to fatigue, is highly beneficial to the best circulation, nutrition of tissues, and elimination of waste products, and the want of such to be justly looked upon as a predisposing factor in the acquirement of disease.

Whenever I am obliged to dispense with it, I substitute massage, the use of the faradic current, or both, and with much benefit. The mental faculties, too, require proper exercise, by light instructive study and literature, innocent and non-absorbing social games, conversation, enjoyment of natural scenery, music, etc., which are indispensable to the proper diversion of the patient's mind.

The amount of physical and mental exercise must, however, be carefully regulated for each patient, and must remain within the limits of safety at all times. The advice must not be given in a general way, but according to the circumstances of the case, the day, or even the hour. What one patient may do with benefit may prove harmful to another, and what is a proper amount of exercise at one time may lead to disaster under conditions of fever, the presence of complications, etc. It is always best to begin with a minimum, and to gradually test the patient's reaction by observations of pulse, temperature, appetite, and loss or gain in flesh; and the physician, in an institution, must have tact enough to do that for himself at opportune times. The patient is hardly ever to be burdened with the responsibility, and in private practice it requires the competent supervision of a nurse or attendant, without which we had, as a rule, better forego the information; for most patients become nervous and timid from such exact knowledge, and I can imagine no more miserable state of feelings and apprehension for the consumptive patient, especially when a physician works himself up too, who at all times and opportunities has his fever thermometer under his tongue and his finger upon his radial artery; and I have frequently been obliged to demand the surrender of the former and cessation of pulse-counting to make any progress at all.

Mr. President, I know that most, if not all, members of this Association share my views, and I present this communication not so much for instruction of the eminent men here assembled, but rather that by their public approval the profession at large may thereby be more ready and willing to take cognizance of a preventable and serious obstacle to the more successful management of a disease, the prevention and successful treatment of which is one of the chief objects of the labors of this Association.

ON THE TREATMENT OF RHEUMATIC FEVER WITH THE COMPOUND TINCTURE OF CINCHONA.

By C. C. P. Clark, M.D., Oswego, N. Y.

IN the days of our grandmothers, when, in their assiduous plying of their knitting-needles, it sometimes happened to them to "drop a stitch," they found it necessary, for the perfection of their work, to go back and pick it up. So, in the domain of therapeutics, when uncounted new remedies have been pouring in upon us and demanding our attention in increasing flood generation after generation, it could hardly fail sometimes to occur that the employment of a particular medicine, in some complaint, though once accepted as beneficent, should for a time, if not forever, fall out of sight and out of memory. This came near happening in the case of the employment of mercury in syphilis. Although that great light, John Hunter, more than a hundred years ago, anathematized the man who should dare to question its specific and nigh miraculous efficacy in that complaint, yet all through the first half of the present century the profession boggled and hesitated on the subject, and it is only very recently that that great therapeutic truth is fully established even among the regular faculty.

I have the vanity to think that I have fallen upon a somewhat similar instance in the matter of the treatment of acute inflammatory rheumatism, or, more properly speaking, rheumatic fever, by the use of the compound (Huxham's) tincture of cinchona. I mean not rheumatic affections at large, for I have little doubt that if the pathology of them were fully understood, the roster of ailments that are customarily classed under that one head would be almost as extensive as that of the diseases of the skin, and must require as various treatment. Certainly there is little or nothing in common between or among rheumatic fever, sciatica, articular, gonorrhœal, and synovial rheumatism, etc.

Ignorant as we still are of the etiology and deep pathology of the form of disease in question,—for I believe no one yet pretends

to have identified its specific microbe,—we are in general hardly less at sea with regard to its treatment. True, many pretended specifics in my own time have been brought to the attention of the profession,—"have had their day and ceased to be,"—the alkaline treatment, and the *quasi* acid, propylamine, and the salicylates. But, having faithfully and fully tried them all, I was still unable, at the period I am about to speak of, confidently to promise a patient attacked with inflammatory rheumatism any speedier cure than the "patience and flannel," or "six weeks" that we read about in writers of the day when bleeding, colchicum, and other physic constituted the armamentarium of the profession for this complaint.

While in this state of mind, I was called, about four years ago, to attend a rather delicate, though no way sickly, lad, of about 14 years, who had been getting sick for three or four days. I found a very severe case of rheumatic fever. Many of the joints were affected, with the usual almost daily change of site in one or more of them. To make matters worse, on my second or third visit I found marked cardiac symptoms.

Ordering the patient, as I always do in this complaint, to be enveloped in flannel, I put him at once on full doses of the salicylates, and for the heart inflammation applied a large fly-blister. Finding the sufferer not only getting no better, but constantly growing worse, I resorted on the third day to eliminative treatment by alkalies and sweating measures. It was at the end of the fifth day that, finding my patient evidently in a very perilous, as well as most distressing, condition, I chanced to recall, in my anxiety, that in the latter part of the last century some of the most trusted members of the profession were in the habit of employing, and strongly recommended in their writings, the compound tincture of bark in this complaint. The suggestion had the more weight with me because this had long been a favorite remedy of mine in several obscure and rebellious conditions of the system; and I directed the young man to take half an ounce of that medicine every four hours. The result was the most immediate and rapid amendment of every morbid symptom that I have ever had the pleasure to witness in this disease. It was so steady and continuous, and so much in contrast with the previous course of things, that I could have no hesitation in attributing it to the new remedy and to that alone. Within four days after its first administration every painful or threatening feature of his condition—heart symptoms and all—had disappeared, and only some weakness, emaciation, and stiffness remained. The man was cured, if ever a man was.

My next case was substantially identical with this, except in the absence of any sign of cardiac trouble, the subject being some ten or a dozen years older, and always before this attack in the enjoyment of good health. He had been for some days under the care of another practitioner, who had treated him according to the best current lights of the day. In spite of which, however, he was hardly able to stir a finger, much less any larger member, when I first visited him, while the sick-room would be blue with his execrations at the least jar of his bed. I treated him in the same way—the story need not be long—and with identical result.

My next case was in the person of the mother of the first. It was, however, much milder than either of the two already mentioned, but, like them, had the characteristics of a general fever. It was treated in the same way and with the same happy effect.

These instances so established in my mind the efficacy of this remedy that from that time to this—during which period I must have treated at least a dozen cases—I have used absolutely no other treatment in acute inflammatory rheumatism, except sometimes an opiate to relieve pain, flannel next the skin, and perchance a blister over the region of the heart, and never have failed of substantially curing my patient within a week at the utmost, and usually in half that time.

It should be added that the neighborhood where I practise is remarkably free from malaria. I have not seen a case of typical intermittent fever for a dozen years.

I should also add that I have not found the remedy here recommended of value in any of the various forms of chronic rheumatism, such as those attended with muscular atrophy or contraction, or in sciatica or any of the other kinds of so-called local rheumatism, but only in that general or constitutional ailment, which, like other fevers and many local inflammations, has at least a strong tendency to a self-limitation, whether of "six weeks" or of some other period. Even here it may be that phenacetin, which seems to possess properties much resembling those of cinchona, and is of late so highly recommended, but which I have had no occasion to experiment with in the complaint in question, will prove as serviceable as Huxham's tincture.

THE DIETETIC TREATMENT OF EPILEPSY.

By John Ferguson, M.A., M.D., S.R.C.P., L.F.P.S.,* Toronto, Canada.

IN the remarks I am about to make, I wish to be understood as limiting my statements to those cases of epilepsy known as true, idiopathic, or genuine. In these cases we have a convulsive seizure that is universally representing in its character. In other words, we have a form of convulsive movement that involves the highest centres. From this the explosion overshadows lower centres, and sets up a very wide and comprehensive disturbance. That the highest centres are involved is seen by the loss of consciousness in true epilepsy; and the abnormal mental state that follows, though this may be very brief. There is also a certain degree of paralysis, consequent upon the discharge of these nerve-centres and the resulting exhaustion.

Just as certain as an epileptic seizure arises in the highest centres, so sure is its course that of an excessive liberation of nervous energy. Ordinary discharge of nerve-energy gives rise to our normal movements. "When this passes into extravagance we exhibit abnormal movements. This liberation of nervous energy is a sudden setting free of stored energy. That this may take place under ordinary conditions of every-day life there must be some unstable state of the matter forming these highest centres. By some means the cellular matter of these centres becomes overloaded with energy, they become unstable, are in a ready condition to part with this energy. This is not all. The discharge is sudden and excessive. When these centres discharge, they not only do so to the extent needed for usual movements, but to the extent that shall produce unusual movements, and be followed by exhaustion, so that the person lies comatose and paralyzed.

It is now a well-known law that all the nitrogen compounds are particularly likely to be unstable, and of a very explosive nature. The brain-substance contains much nitrogen, and as such tends to be an unsteady compound. Can the brain at certain times contain more nitrogen than is normally present? My own belief is that it may; that there may be such an atomic rearrangement, so as to produce molecules with too much nitrogen. I cannot give any chemical proof for this opinion. It rests entirely upon clinical evidence. The fact, however, is known to all that, from time to time, the brain assumes that status which causes a nerve-explosion, while, at other times, these same centres are quiet, or reduced to the normal condition of stability, or subexcitability. There must have been some important change induced by the discharge, and this change is in the direction of reducing the highest nerve-centres to a more stable condition for a time, to a condition where I believe the molecules are so arranged as to contain less nitrogen. There are different proteids, and these contain different proportions of nitrogen. Now, as these may vary in the brain, we may easily pass from a condition of stability to one of great instability; in other words, to an epileptic brain.

Certain drugs act upon the nervous centres so as to control to some extent this tendency to discharge. How is this done? The answer is twofold. First, these drugs may act so as to fix the nitrogen compounds, and render them more stable, less likely to part within nitrogen, less ready to discharge. Second, these drugs may act by preventing the formation of these unstable nitrogen compounds. This, I believe, is the real explanation. Under the use of the bromides the molecules take in nitrogen less rapidly, and consequently do not become so unstable or explosive.

If this is the case, can anything be done towards the reduction of the share of nitrogen by feeding the patient after some fixed plan? To this I answer, yes. Take young dogs and cats, and feed them too freely upon meat, and you can make them—especially the dogs—very subject to fits, similar to ordinary epilepsy in the human subject. Acting on this line, I have been in the habit of making my epileptics become strict vegetarians. Eggs, lean meat, red fish flesh, cheese, peas, beans, and all nitrogenous articles are cast off. The amount of nitrogen entering the system is reduced by this means to the lowest possible quantity. Under this dietary it is much more difficult for the nervous system to build up those unstable molecules, full of nitrogen, ever ready to fall into new combinations, and produce discharge of energy, while these changes are being effected. By persistently reducing the daily consumption of nitrogen there is not such a free formation of the catabolic molecules, the discharge of which is necessary for the production of the

* Demonstrator of Anatomy, Medical Faculty, University of Toronto; and Lecturer on Nervous Diseases, Summer Session.

convulsive seizures of true epilepsy. This method of treating these patients has been of very great value in my hands. It would seem, however, that the restitution of the diet to an almost non-nitrogenous vegetable one is of most use in those extremely catabolic conditions met with in the status epilepticus. It is in this variety of the disease that we have such poor results from the administration of drugs. I have treated some epileptics on the above food plan and without drugs, the health being better than when taking the bromides, without the restitution in diet. I would not go the length of saying that epilepsy is a food diathesis, yet I am strongly inclined to think that it tends this way. Not all those who use meats and liquors to excess become gouty; nevertheless we do not doubt that gout is a food diathesis thus produced.

With our epileptics there is an extremely unstable condition of the nervous molecules. This unstable state can be greatly lessened by lessening such food-supply of the molecules, as that from which the excess of nitrogen is obtained.

Whether the above is a true explanation or not of the action of a non-nitrogenous diet, it is at all events some explanation. We shall all await the reports of chemists on the minute and, perhaps, varying composition of the brain. I am strongly of the opinion that a good deal of the work that shall be done in the near future shall be along the line of this higher chemistry. The clinical facts remain, whether the explanation stands or falls. Patients that have been greatly afflicted with epilepsy, and have become wearied with much taking of drugs, have derived a very great deal of good from being restricted to a diet containing the least amount of nitrogen consistent with life, and that, too, almost exclusively of a vegetable kind.

ON THE USE OF NITROGENIZED FOOD IN FEVER AND WASTING DISEASES, ESPECIALLY IN THE FORM OF PEPTONIZED BEEF-POWDER (MOSQUERA BEEF-MEAL).

By Frank Woodbury, A.M., M.D.,*
Philadelphia, Pa.

NITROGEN, as aptly remarked by the late Dr. J. Milner Fothergill, is the characteristic element in most explosive and force-generating compounds from gunpowder to nerve-substance. It certainly is the essential chemical component in the class of foods which is universally recognized by physiologists as the special suppliers of energy to the human frame. But this class of alimentary substances (commonly known as *proteids*, on account of their high rank among nutritive agents, or *albuminoids*, because albumen is taken as the type of the class) has a more important mission than that of merely supplying material for metabolism possessed of a high coefficient of energy; they are pre-eminently the tissue-building and tissue-restoring foods. They supply the elements which by the living cell are appropriated and converted into bioplasm, thus affording the means of generating new cells and cell-products and of replacing effete structures. They are so essential to growth and development that the name of "plastic aliments" was given to this class by Baron Liebig, the pioneer among physiological chemists of this century.

From the earliest times to which medical records can be traced, clinical observation and experience have sanctioned the use of animal food—in the form especially of broth (jusculum or pulmentum)—as a restorative in wasting disease and during illness or prostration from any cause, where it was considered desirable to introduce nourishment in a form easy of assimilation and capable of promptly invigorating the bodily powers. The flesh of various domestic animals has been used for this purpose, though probably beef, being the most convenient, was the most frequently employed.

In fact, beef-infusion, bouillon, or beef-tea, as it is popularly termed, a generation ago was regarded with such extravagant esteem that it threatened to become a fetich. As soon as sickness was announced in the house, the good-wife would, of her own accord, proceed to administer potions of this rather insipid beverage to the invalid, as a sort of formal notice to the family that he was on the sick-list; perhaps also with a vague hope, by the sacrifice of a libation, of propitiating the lares and penates, so as to bring about in some mysterious way his early restoration to health. This practice generally received the full approval of the attending physician when he was called in. Possibly his knowledge of dietetics in disease did not extend much beyond a favorite formula for making the beef-essence or beef-tea, which he delivered with such magistral air that it is not surprising that its details were received with reverent, almost superstitious, attention and scrupu-

* Fellow of the College of Physicians of Philadelphia; Honorary Professor of Clinical Medicine in the Medico-Chirurgical College, etc.

lously obeyed, while the weightier matters of sanitary law were too often sadly neglected. Although this practice in some families still survives, there are at the present day few physicians of any standing in the profession who cling to the traditional beef-tea, or regard it as possessing much actual food-value. The iconoclast and scoffer have done their work. Both chemist and clinician now assert that the meat-infusion, as ordinarily made, by boiling, contains only some of the salts of the meat, flavored with osmazome, the albumen, rendered insoluble by heat, being precipitated and left behind in the strainer. In other words, beef-tea, thus prepared, represents a very small percentage of the actual nutritive material contained in the meat. Fothergill contemptuously declared that in chemical composition it resembles urine, and implied that it did not possess much more value as food. Its only recognized worth was thought to be its slight stimulating effects upon the stomach and circulation. Moreover, Lauder Brunton claims that, even when carefully made at a lower temperature, so as to retain some peptones, it is really injurious when taken in large quantities. He raises the question whether "the products of muscular waste, which constitute the chief portion of beef-tea or beef-essence, may not, under certain circumstances, be actually poisonous?"* His fear of peptone poisoning was apparently based upon the results of experiments made by Albertoni and by Schmidt-Mühlheim, which demonstrated a fall of blood-pressure, stupor, and fatal convulsions, following the introduction of peptones into the veins of dogs. In a case, reported by Brunton, of a man who had drunk a large quantity of beef-tea at a draught upon an empty stomach, peptones were found in the urine, thus demonstrating their passage through the blood unchanged. In this case the serious results predicted apparently did not occur, or they would have been recorded as being of more interest than the mere existence of peptonuria. It is not improbable that the untoward results in the laboratory experiments might be attributable to other causes. They might, for instance, be due to accidental contamination with ptomaïnes, which are prone to appear in peptone-preparations after standing awhile, owing to the almost inevitable presence of micro-organisms, which in them find a most favorable culture medium. (Here we have a hint not to keep broth standing exposed to the air, but to make small quantities at a time and use while fresh.) Some such explanation must be true, since no one has seen similar serious results following the administration of well-made broths, even when comparatively large quantities have been taken, as in the case just cited. Brunton, it is true, speaks of the possibility of bad results, and believes that he has seen some ill effects, but his large experience appears to offer no actual instance of abnormity more marked than the case of peptonuria mentioned.

There was an old notion, which requires a brief consideration, that in the treatment of fevers, or diseases attended by fever, animal food was especially injurious, although it was known that in this state the nitrogen excretion is largely increased. Huppert and Riesell, some twenty years ago, in their researches into nitrogenous metabolism, apparently afforded the first scientific basis for this belief. They assumed that their experiments conclusively established the fact that, after the free administration of albuminoids to febrile subjects, more nitrogenous products of metabolism were excreted by the urine than with a diet poor in albumen. Following these authorities, many believed and taught that "in fevers not only can no nitrogenous equilibrium be established by any supply of nitrogenized food, but that the withdrawal of albuminoids from the body and the disintegration of its structure are still more accelerated."† Many clinicians, however, refused to accept this dictum, which was destined to be soon overthrown by the experiments of Immermann, whose results were confirmed subsequently by Bauer and Kunstle. The last-named investigators examined the question from the clinical stand-point in a typhoid fever patient, whose food and excreta were daily analyzed, and the amount of nitrogen in each carefully determined and recorded. Without dwelling upon the details, they conclude that it may now be accepted as proven that "by the supply of albuminous food to a fever patient a saving of albumen in the body may be effected; for, though the excretion of nitrogen is increased, the loss of the same element from the body is reduced." In other words, the nitrogen excretion does not increase proportionately with the increased supply in the food. At the same time, "it should be observed that the diet did not consist of

* "On Disorders of Digestion," London, 1886, p. 247.

† "On the Dietary of the Sick and on Dietetic Methods of Treatment," Professor Bauer; Ziemssen's "Hand-Book of Treatment," New York, 1885, p. 208.

pure albuminates, but of mixed food, rich in nitrogen, though containing also fat and carbohydrates as well as albumen."*

In many acute disorders, where the course of the disease is brief, the patient may have sufficient nourishment stored up in his tissues to support life until convalescence occurs, so that, in such cases, a low diet will suffice, and food becomes of secondary importance. On the contrary, in prolonged cases of disease, especially where the patient is weak and not well-nourished, a regular supply of easily-assimilated food becomes of paramount importance. From physiological laws, to which brief reference has been made at the beginning of this paper, nitrogenized aliment is necessary in order to supply the elements needed for the building up of tissues; and this is especially the case when there has been increased metabolism and destruction of albuminates, the result of increased temperature. Starchy foods fail to supply the plastic principles required to restore the tissues to their normal condition.

The principal articles for the sick which contain nitrogen are meat, eggs, and milk, or casein or albumen in some form or other. From these, various nutritious articles of food are made, such as milk-punch, egg and milk, broths, and various combinations, such as consommé with egg, custards, meat-juice with milk, etc. In order to make the casein more acceptable to delicate stomachs and weak digestive organs, milk may be partly peptonized, by the use of digestive ferments, before administration; if fully peptonized, the taste of the milk becomes disagreeable and bitter. By this method, the question of nutrition in some trying cases has been much simplified, and the results have been more successful than any hitherto obtained. In the same way, meat may be partially digested, and beef-tea, made by the cold method, does, in fact, contain a considerable proportion of peptones, and is made correspondingly more nourishing and valuable.

A new and very promising food-product has just been brought to this country. It is in the form of a fine meal, made of desiccated beef, prepared in a novel manner. Some years ago Débove, of Paris, called the attention of the profession to the usefulness of powdered beef in his method of forced feeding (gavage), and described a process for preparing it. Various forms of powdered meats have been brought forward at different times, but they failed in nutritive value, as they largely consisted of insoluble matters. The beef-meal of the Mosquera-Julia Food Company of Venezuela, however, is manufactured on a new principle; its projectors have solved the problem finally by treating fresh, lean beef with a digestive agent before desiccating it.

A word may here be said with regard to the method of making the beef-meal and the agent used in partially peptonizing the meat. It was about ten years ago that Professor Wurtz, of Paris, isolated from the juice of the *Carica papaya*, or papaw-plant, a principle resembling pepsin in its action upon albuminoids, converting them into soluble albumoses and peptones. This substance, which he named "papain," is now comparatively well known, and it has been used for cases of weak digestion, and also for its softening effect upon the false membranes, as a local application in diphtheria. It has recently been discovered that this valuable property of digesting meat and of converting albumen into peptones is not peculiar to the papaw, but is exhibited also by some other plants. It is especially manifested by the pine-apple and allied plants of the Bromeliaceæ.

In the preparation of the Mosquera-Julia beef-meal the juice of the pine-apple plant is utilized with very excellent effect. The advantages of employing a vegetable digestive principle rather than animal pepsin (and especially the usual kind of pepsin) are very obvious: the superiority of the former over the latter needs no discussion from either an æsthetic or antiseptic point of view. It is a matter of considerable importance that the ferments of vegetable origin are entirely free from the forms of pathogenic bacteria, which are liable to be found contaminating animal pepsin and pancreatin.

The Mosquera-Julia beef-meal, therefore, differs essentially in its mode of preparation from all other powdered meats, and the resulting product is correspondingly superior. Other powdered meats consist largely of indigestible fibre, and have a disagreeable odor and taste; this, on the contrary, is largely soluble and is odorless, and has a pleasant taste; it is entirely free from the bitterness that generally attends preparations made with digestive ferments of animal origin. It represents all the constituents of fresh meat in highly-concentrated form, predigested with pine-apple juice, as previously stated.

Containing, as it does, less than ten per cent. of water, it will be seen that Mosquera's

* Bauer, *loc. cit.*

beef-meal, with the exception of this small percentage, is composed of nutritive matter, nearly half of which is in a readily soluble form; the other half easily convertible into soluble products by the digestive juices, as may be determined by testing samples of the insoluble matter with solutions of pepsin and hydrochloric acid, and with alkaline solutions of trypsin.

Lean beef, according to Dr. Letheby, has the following composition:

	Per cent.
Nitrogenous or albuminoid matter	19.3
Fat	3.6
Saline matters	5.0
Water	72 0

From these figures it is evident that Mosquera's beef-meal, having been freed from water, contains about four times the amount of albuminoid matter present in average lean beef; but the real difference in nutritive value must be considerably greater than this, since one-half of the proteid matter of the beef-meal is in a readily assimilable form, and, furthermore, the preparation contains about three times as much fat. Another notable feature in this preparation, which distinguished it from other predigested albuminous foods, is the absence of all objectionable taste and smell. The bitter, or other disagreeable taste of ordinary peptone preparations, is, as before stated, wholly wanting in this product. This is a very important point, since by its aid a highly nourishing broth can be made at a moment's notice, which can be taken with relish by the sick or the well.

Without dwelling upon individual cases, I would state that I have found the beef-meal especially serviceable in relieving prostration and the effects of fatigue, in elderly persons, in the form of the broth just mentioned, and nicely seasoned. Also, in the intestinal disorders of the aged, it serves to support life and sustain strength, without taxing the digestive functions, already enfeebled by disease and physiological decay. In cases of pulmonary phthisis I have seen good results in keeping up the vital powers and in aiding the struggle against the deadly progress of the disease. I would especially mention the use of the broth, seasoned with pepper or capsicum, in cases of alcoholic excess, drink-craving, and delirium tremens. Here the stomach rejects ordinary food, but does not rebel against the hot broth, in moderate quantities, repeated at short intervals. In all cases of fever, where beef-tea was formerly employed, the strength of the patient can be maintained much better with such an easily-assimilated preparation as this. As insisted upon by Graves, the delirium and other nervous symptoms of fever are often due to weakness caused by want of nourishment; in truth, he states, in one of his clinical lectures, that he had seen many fever patients starved to death. This is not the practice at present. Since Graves's time we have learned to feed fevers, and the change, which is largely the result of his teachings, has been very much in favor of patients. The chief problem of how to obtain animal food in easily-assimilated form seems at last to have been solved. Moreover, by the judicious use of broths made with Mosquera's beef-meal, it will be found that the necessity for a resort to alcoholic liquors is of rarer occurrence, owing to the absence of the so-called indications for stimulants.

In cases of infantile prostration or debility, following bowel disorder, it becomes necessary very often to stop the administration of milk and substitute some other form of nourishment. In such an emergency the strength of the little patient can be supported by mixing beef-meal with rice-water or albumen-water, and the patient kept upon this exclusively, for days at a time. Many cases of rickets are due to insufficient nourishment in early life. The mother's milk may not be sufficient in quantity or of good quality, or the artificial food may be given too much diluted. In such cases good immediate results may be obtained, and future difficulties averted, by a more generous diet, and especially by an easily-assimilated nitrogen-containing aliment, such as beef-meal. Of course, there are other ways of administering this valuable nutriment than those I have mentioned, which will suggest themselves to the mind. It may be dusted on bread, a little sandwich made with it, or it may be mixed with almost any other article of food, such as coffee or chocolate, of which children usually are very fond. Finally, it would form a highly useful addition to nutritive enemata in cases where feeding by the rectum is deemed advisable; it may also be introduced, as in the method followed by Débove, by gavage, using a stomach-pump or soft rubber tube.

If the beef-meal is kept up to the present standard of quality, and by more extended experience is found to fully accomplish all that this preliminary note appears to warrant us in expecting from it, I believe that the terms used in this communication will be found to come short of its actual value in the sick-room. I can only say that while

under trial in hospital and private practice for some months it has proved in my hands highly satisfactory, and has entirely superseded the old forms of beef-tea and broth in cases in which they were formerly considered indispensable.

218 South Sixteenth Street, Philadelphia.

ACUTE PLEURISY AND ACUTE RHEUMATISM.

In 1883 Aufrecht drew attention to the decided results he had obtained in the treatment of acute pleurisy with the salicylates. Recent writers, notably Tetz (in the *Therapeutische Monatshefte*, No. 7, 1890), have confirmed his observations. We must allow that the title of a remedy to cure acute pleurisy must be very well substantiated. Acute pleurisies have a way of stopping short without treatment, of beginning with a fierce pain which suddenly abates, and of suddenly going on into the stage of extensive effusion with very little warning pain at all. Nevertheless, the successful results of the administration of salicylates in acute pleurisy, as recorded by these writers, are sufficient to raise in our minds the question as to whether acute rheumatism and acute pleurisy are not the same disease. Long ago Mr. Hilton, in his admirable lectures on "Rest and Pain," pointed out the resemblance between the pleura and pericardium and the joints. The pleural cavity represents a huge joint constantly in motion. It has the two surfaces covered by serous membrane and gliding smoothly upon each other by the aid of a lubricating fluid. And Mr. Hilton went on to apply his law of associated muscular action, nerve-supply, and function to the pleura, showing how, when inflammation took place, the nerves of the pleura that were directly in communication with those supplying the intercostal muscles called for cessation of movement, and how the pain felt in the skin over the inflamed area was the agent by which this needed rest was obtained. Practically the same thing occurs in the joint that is inflamed and painful from acute rheumatism. Probably the resemblance between inflammation of a serous membrane and that of a joint would be more striking were the conditions exactly similar. But in the case of the serous membrane complete rest of the opposed surfaces cannot be obtained. The lungs cannot cease taking in air, and the heart cannot stop beating. Probably this accounts for the more fibrinous and adhesive character of the effusion, a further effort of nature to secure rest. In the case of the joint immediate rest is secured, and the effusion is not adhesive in ordinary cases.

The clinical features of acute rheumatism point to a common origin with pleurisy, if not to a practical identity. Many cases of acute articular rheumatism are complicated with effusion into the serous membranes. We say *complicated*, but we mean really that the pleural joint or the pericardial joint has been attacked as well as the wrist joint or the elbow-joint. And pleural effusions are of much more frequent occurrence in the course of rheumatism than is commonly supposed. In the ordinary run of cases of acute rheumatism, the joints are so very painful that an examination of the bases of the lungs is not quite practicable, and, moreover, there are many practitioners who do not injure themselves with overzeal in the clinical examination of patients, particularly after a good working diagnosis has once been made out. We are satisfied that, if pleural effusions in rheumatism were more frequently looked for, they would be oftener found, and those who found them would be more disposed to regard rheumatism as a general attack on all the joints, including the serous membranes.

The general tendency to look with suspicion upon "exposure to cold" as a cause for so many diseases, to regard chilliness as an effect consequent upon the poisoning of the system by some external agent, rather than as a cause of disease, makes us sceptical as to whether such a thing as *pleuritis a frigore* exists. Is it not more rational to regard it as being due to some inherent tendency in the individual to inflammation of an arthritic form, and to infer that, when pleurisy occurs alone, it simply means that only one joint is affected, or perhaps that the main attack has been upon one joint, the others escaping lightly? The frequent occurrence of pleurisy without effusion into other joint cavities might arise from the fact that into the pleura a quantity of fluid may be effused rapidly, while when the joints are the main points of attack but little can make its way into them. To borrow an old expression, the *materies morbi* readily leaves the blood to fill up the pleural cavity, but, attempting to pour itself into a joint, it meets with resistance and seeks an outlet elsewhere. The effect of the salicylates, so well marked in rheumatism, ought to be equally good in this disease, and we trust that many observations will be made in this interesting subject.—*New York Medical Journal*, November 1, 1890.

The Therapeutic Gazette

EDITED BY
ROBERT MEADE SMITH, A.M., M.D.,
Professor of Comparative Physiology, University of Pennsylvania,
PHILADELPHIA.

GEO. S. DAVIS,
Medical Publisher, Box 470,
DETROIT, MICH.
Philadelphia, 714 Filbert Street.

SUBSCRIPTION RATES FOR 1890.

(Journal increased to 72 pages each month.)

THERAPEUTIC GAZETTE (postage included).....$2.00
THERAPEUTIC GAZETTE with MEDICAL AGE..... 2.50
THERAPEUTIC GAZETTE with AMERICAN LANCET 3 25
THERAPEUTIC GAZETTE with AGE and LANCET... 4.00

Foreign subscriptions may be ordered through our agent in England, Mr. H. K. Lewis, Medical Publisher and Bookseller, 136 Gower Street, London. Price 10s. Remittances may be made either by Postal Order or Stamps.

Price to Foreign Subscribers direct (postage included), $2.50 (10 shillings). English postage-stamps received on remittances.

Editorial communications should be addressed 332 South Twenty-first Street, Philadelphia. Articles intended for the Original Department of the GAZETTE will be accepted only with the understanding that they are contributed to it exclusively.

Business communications should be addressed to the Publishers.

Leading Articles.

ETIOLOGICAL THERAPEUTICS.

TO remove the cause is the first principle in therapeutics. But, unhappily, this indication is not always easy of fulfilment; hence the various empirical methods of treatment in vogue which assume the cause to be unknown; hence the necessity oftentimes of resting contented with symptomatic therapeutics.

1. There exists a whole category of diseases, of which the causal agent is still obscure (*e.g.*, gout, rheumatism, herpetism, carcinoma, etc.), where the best that can be done is to meet symptoms as they may arise, and, as far as possible, bring back deranged physiological processes to the normal.

2. There are other diseases the causes of which are multiple or complex. It is very probable that some or all of the morbid conditions mentioned in the preceding paragraph may belong to this category.. Take, for instance, a case like the following: A man is an earnest student, and in his devotion to his books he denies himself the needed sleep. Moreover, he is addicted to certain vices,—to the tobacco habit, to alcoholism, or to gluttony. Nervous prostration and morbid states of the heart, kidneys, stomach ensue. Eventually he becomes a victim of phthisis.

As an instance of complexity of causation, we will suppose a case of epilepsy, due (as far as the probable antecedents can be traced) to nervous instability, inherited from both lines of the patient's ancestry, and aggravated by bad hygiene and personal vices of his own. In such cases the difficulty of instituting any satisfactory treatment based on etiological considerations is apparent.

3. There are diseases of which the cause may be known, but the effects are more or less persistent, though the cause is no longer operative. Such are the catarrhal affections produced by cold. It may be that in these cases it will ere long be admitted by all (as it is now affirmed by many) that the cold—the chilling of the body—is only a predisposing cause, by the depression of vitality which it produces rendering certain vulnerable textures a fit soil for the habitation and pullulation of pathogenic microbes (as the microbes of suppuration). However this may be, the effects may long remain.

Another instance is seen in the pathological sequences of certain poisons,—alcohol, tobacco, mercury, opium, lead, phosphorus, arsenic, etc. The injuries to the principal vital organs caused by these agents is often irremediable.

4. The cause may be known and the effects may be removable, on the principle—"*Sublata causa*, etc." The inebriate may not have gone so far in his downward career but that with entire reformation *restitutio ad integrum* may take place. The same may be said of the morphine *habitué*.

The victim of puerperal septicæmia may often be saved if by rigid antiseptic precautions all further introduction of bacterial infection is prevented.

It is by intelligent therapeutic intervention in morbid conditions that come under this category that the physician finds his largest sphere of usefulness, and his principal satisfaction in the pursuit of his humane calling. The opprobrium of medicine has ever been that it could neither reach the cause nor remove the effects, while the surgeon, by attaining both these ends in the exercise of his art, not seldom finds occasion to magnify his office above that of the general practitioner.

Under the head of "exciting causes" of disease which are "cognizable," we have such as are mechanical, which injure structure or

impede or derange function; we may instance tight stays, a stone in the bladder, a gall-stone, a renal calculus, tumors, etc.; the ingesta are a frequent source of disease, and the same may be said of excessive bodily or mental exertion, excessive evacuations, suppressed or defective evacuations, defective ventilation, cleanliness, and drainage. By careful attention to the removal of these causes, the physician and surgeon may often show themselves adepts in etiological therapeutics.

The old text-books on pathology spoke of certain "non-cognizable" agents,—*i.e.*, the endemic, epidemic, and infectious poisons. Modern pathology is no longer content with this classification, or with the admission that these infectious agents are unknowable. Nor do the terms *virus*, *poison*, *miasm* now satisfy the exact demands of a more enlightened pathogenic nomenclature; we are looking for the specific microbes and the "ptomaïnes" which they generate as the explanation of all the infectious diseases. It is true that but few of these have yet been discovered, and many still remain "unrecognizable," but the progress which has been made warrants the expectation that ultimately the living agents of all the communicable diseases will be known. It cannot but be that advance in therapeutics is destined to be along this line of etiology. As fast as the agents of infection become recognized there will be the irresistible tendency to antagonize and destroy them; at any rate, prophylaxis has won signal triumphs in this direction already.

If Koch's discovery, which has of late been heralded across the water, of the method of treating phthisis by the use of his vaccine lymph, should prove to be what is claimed for it, we may be on the eve of a revolution in medicine in the line of etiological therapeutics, but we must await with soberness the results attending further experimentation with this method.

ANTIMONIALS.

ALTHOUGH the statistics of Lasègue and Regnauld (1855–1877), completed by Bourgoni and Beurmann down to near the present time, show that in the Paris hospitals, as indicated by the books of the Pharmacie Centrale, the use of antimonials in medicine does not seem to have sustained much variation for the last thirty years, and although we have no equally good statistics to tell whether the consumption of antimonials in this country and in England is on the wane or remains about the same, yet, if we may trust the statements of representative practitioners and pharmacists, there has latterly been a great falling off in the employment of these medicinal agents. As for the disciples of Rasori, who taught the doctrine of excessive stimulus in acute diseases, they are all dead, and no one now gives antimonials in the enormous doses which he recommended in order to have a contra-stimulant action, and jugulate or restrain an inflammation. An enormous advance has been made in the knowledge of pathological processes and the actions of medicines since Rasori enunciated his theory early in this century. Between the doctrines promulgated by Rasori and his opponent Brown, no one doubts that Brown was more nearly right in insisting on the factor of debility or asthenia, as essentially characterizing all acute disease. With the prevalence of the microbial doctrines, there is more and more tendency, not only to ascribe to microbes a causal agency or prominent part in all inflammatory and febrile diseases, but also to emphasize the predisposing debilitating conditions which render the fluids and solids of the organism a fit culture medium for the development and depredations of the virulent micro-organisms. Therefore the idea seems nonsense to most practitioners that the liberal administration to the sick man of one of the most depressing medicaments of the materia medica is likely to give him an advantage in the life-and-death struggle with the microbe foe. Hence it is that, even in pneumonia, less and less tartar emetic is now exhibited. Formerly it was the routine practice to treat this disease from the first with nauseating doses of this antimonial; at the present time few properly-instructed medical men make much account of this medicament in the therapeutics of pneumonia; in fact, the average physician fights shy of it altogether. Statistics have proved again and again that pneumonia does not do better with tartar emetic than without it, and, at the most, only certain symptoms, as dyspnœa, may be favorably modified by the administration of small doses of the antimonial. In fact, the microbial theory of pneumonia is coming more and more to the front, and the fact is recognized that the predominant indication—in the absence, as yet, of any known parasiticide medication—is to sustain the vital forces in their struggle with the bacterial enemy.

So it might be said of other acute inflammatory affections for which antimony was formerly freely given. It is true that the notion is still widely held that in inflammations with active determination of blood, tartrate of antimony, in suitable doses, may so enfeeble the action of the heart and so lessen arterial tension as to diminish the afflux of blood to the inflamed part, and thus limit exudation and perhaps apoplectic extravasations. That there are now and then inflammatory attacks in phthisical individuals, where the judicious administration of antimony is demanded, we would not deny, but even in such cases many practitioners prefer depressants like veratrum viride, which are relatively safer. It is easy to carry too far, especially in infirm and aged patients, and, in cases of fatty myocardium, the known *cardiac depressant* effects of antimony; indeed, all authorities admit that children and the weak and aged are poor subjects for the exhibition of this remedial agent.

The utility of antimony in the production of diaphoresis in occasional febrile affections of ephemeral character is unquestioned; at the same time, it is easy to find other drugs which produce the same effect with less nausea and prostration.

The relaxing effects of tartar emetic on the muscular system made it once much employed for the reduction of herniæ and dislocations; at the present day, the superiority of chloroform and ether, pushed to full anæsthesia, in the production of muscular relaxation is everywhere recognized.

The specific influence of tartar emetic on the secreting organs, and especially on the respiratory mucous membrane, has made this remedial agent useful in laryngitis and bronchitis, with absence of secretion, and more or less of dyspnœa. Even here, especially in the therapeutics of childhood, ipecac may generally be substituted for the antimonial, and the effects will be equally good. If antimony be given at all in infantile therapeutics, it had better be given in the way that Ringer suggests: Dissolve one grain in a pint of water, and give in teaspoonful doses. He would give this dose every half hour, till relief is obtained, to a child from 6 to 12 years of age, where there is much bronchitis, with sibilant râles and dyspnœa. It is doubtful whether any advantage is gained by continuing the antimonial in any dose whatever after secretion is established.

There is no call for the administration of tartar emetic in pseudo-membranous laryngitis, while in the spasmodic form "no medicine," says Stillé, "is more certainly or promptly effectual in arresting the progress of this distressing but seldom dangerous disease than antimonial emetics." It is needless to say that in this false croup other practitioners (*vide* Niemeyer, Steffen, Brunton, Dujardin-Beaumetz) place more reliance on anodynes and antispasmodics, such as musk, assafœtida, bromide of potassium, castor, and chloral.

THE PHYSIOLOGICAL ACTION OF THE BROMIDE OF RUBIDIUM AND AMMONIUM.

IN the THERAPEUTIC GAZETTE for October 15, 1889, and January 15, 1890, we published accounts of the studies made by Professor Laufenlauer and Dr. Rottenbiller as to the results which followed the administration of the double bromide of rubidium and ammonium in epilepsy. These results appear to have attracted but little attention, in spite of their extremely favorable character. The high price of the remedy is probably largely answerable for this dearth of material, and it is to be hoped that the remedy will become more accessible for extended studies. The investigations of these authors were made solely in epileptic cases, and we possess very little knowledge as to the precise physiological action of this remedy. There can be no doubt but that the base rubidium is possessed of influence, although Botkine (THERAPEUTIC GAZETTE, September 15, 1888) has shown that the difference between the salts of rubidium and of potassium is purely quantitative, the salts of rubidium acting more energetically than those of the cæsium, and more nearly approaching in their action the salts of potassium.

This conclusion, it should be noted, does not confirm the hypothesis of Professor Laufenlauer. He believes that the activity of the metallic bromides is in direct proportion to their atomic weight. It must be admitted that even Professor Laufenlauer's clinical results scarcely confirm this view, for although rubidium has an atomic weight of 85.2 contrasted with 39.04 of potassium, he does not even claim that the action of the rubidium salt in epilepsy is greater than that of the potassium salt. Accessible clinical data are as yet insufficient to determine the therapeutic value of the rubidium salt, but it is evidently highly desirable, before further experiments be made with this addition to our list of remedies, that

a more accurate idea of its physiological action be obtainable. This has been accomplished by Drs. Tanzt and Vas, who publish in the *Internationale Klinische Rundschau* for October 26 and November 2, 1890, an elaborate essay, based upon experiments made with the bromide of rubidium and ammonium in the laboratory of Professor Korany, in Buda-Pesth.

These authors have found that, administered subcutaneously to the frog, in doses of 4½ grains, fibrillary contractions occur at the point of injection, and soon extend to the entire muscular system. Respiration and voluntary movements decrease in energy in four or five minutes, and soon symptoms of slight anæsthesia appear in the hind extremities, and gradually extends throughout the entire body. After twenty minutes there is general anæsthesia, even the cornea is insensitive, and the posterior extremities paretic; on opening of the thorax, although respiration has ceased, the heart still continues to contract rhythmically, although feebly. When the dose is increased, the first signs of irritation are more violent, and anæsthesia and paralysis develop more rapidly.

Analogous symptoms were produced in mammals. 15 grains introduced by means of an œsophageal tube into the stomach produce at first signs of increased muscular activity, passing gradually into general clonic convulsions, which soon gave place to paralysis, anæsthesia gradually being produced, until finally the entire body is insensible to irritation. The pupils are then largely dilated, the action of the heart weak and frequent, and respiration slowed. After the administration of such doses, recovery, as far as the motor symptoms, is complete within twenty-four hours, although the sensory organs still remain depressed below normal. The urine contains albumen, the temperature is reduced below normal, and death occurs in four or five days from disturbed respiration.

When 45 grains are given by the mouth to a rabbit, death is produced in two hours, the animal being absolutely anæsthetized and paralyzed. 75 grains produce almost immediate death, with symptoms of asphyxia. Continued administration of this remedy by the mouth leads to gastric catarrh, which, if large doses have been given, is recognizable by erosion, infiltration of blood, and desquamation of the epithelium of the mucous membrane.

The authors believe that their experiments have shown that there is a diminished irritability of the motor areas of the cortex following the use of this double salt, since they found that after its administration a stronger current was required to produce movements on stimulation of the motor areas than was previously the fact. Such a conclusion, however, cannot be accepted as demonstrated, for they add that they have found that, even in cases where the drug was administered by the stomach, there was diminished irritability both of muscles and motor nerves, and the paralysis is, therefore, much more reasonably attributed to the latter cause than to action on the cerebral cortex. Nevertheless, it is evident from the primary stage of increased reflex irritability, the modification in the respiratory rhythm, and the final suppression of reflexes, even although the motor nerves and muscles are not absolutely paralyzed, that this remedy is not without action on the central nervous system. Any action on the cortex has not yet, however, been proved. During the stage of increased reflex activity, the contractions of the heart are more frequent and more powerful, while in the final stages pulsation is slower and weaker, though still rhythmical. Extremely concentrated solutions of the rubidium and ammonium bromide rapidly produce paralysis of the heart in diastole. In certain cases they observed that the heart continued beating rhythmically for an hour or more after the production of the stage of complete paralysis, thus seeming to show a deviation from the belief generally held that potassium salts paralyze the heart. In fact, in the case of rubidium having a greater atomic weight, if the suppositions of Laufenlauer are correct, we would expect an even more energetic effect.

To determine the share of the different components of this double salt in producing this result, the authors made a few experiments with the pure rubidium bromide, and a comparison of these results with those which followed the administration of the double salt seem to show that while the rubidium bromide acts more intensely in paralyzing the spinal cord and heart, the rubidium ammonium bromide produces but slight action on the spinal cord, and a very prolonged irritant action on the heart. The less depressing action of the double salt on the heart, contrasted with the pure rubidium bromide, is, therefore, partly attributable to the ammonium in the combination, and to the difference in the amount of alkali in each; for the proportion of rubidium in the rubidium ammonium bromide is as .064 to

.103 in the pure rubidium bromide. It thus would appear from the authors' studies that under the influence of rubidium ammonium bromide the sensibility and motility are depressed before the reflex action is entirely suppressed, and respiratory movements are arrested considerably later than voluntary movements, and that the heart preserves its function still later; that sensibility is earlier arrested than motility, and the spinal cord loses its irritability sooner than the nerve-trunks.

This class of effects, therefore, constitute a marked difference to the action of the bromide of potassium, under whose influence motility is generally affected earlier than sensibility, and the nerves and muscles become paralyzed before the spinal cord.

In guinea-pigs, made epileptic by Brown-Séquard's method, this salt produced no effect, though potassium bromide was likewise inefficacious.

By their contribution to the comprehension of the physiological action of this double salt, a step in advance has been taken towards the determining of its therapeutic action, and the prospects of its proving of value are extremely encouraging.

THE CURE OF TUBERCULOSIS.

FOR the past weeks the daily newspapers have been filled with the most sensational stories from Berlin as to the wonderful revolution which was to occur in the therapeutics of tuberculosis from the discoveries of Koch; and several English and American journals have published what purports to be a translation of the original article by Koch, stated to be published in the *Deutsche Medicinische Wochenschrift* for November 14, 1890. Reference to that periodical shows, however, that no such article has been published by Dr. Koch, and the authenticity of the statements of the most exaggerated character, which have been going the rounds of the lay and medical press, seems, therefore, to say the least, doubtful.

When Koch announced at the last International Congress that his investigations warranted him in forming some hope as to the possibility of the discovery of a remedy which might prove of the greatest value in tubercular affections, the interest excited by these statements was only equalled by the hope that they might be founded on fact.

In the articles referred to no apparent advance in Koch's data seems detectable, while the composition of the remedy is still preserved a secret. The latter state of affairs is excused by Koch as attributable to the incompleteness of his studies, and the fact that the preparation of the remedy entails so much expense and excessive care that its publication might lead to the throwing on the market of worthless imitations. To us in America such a state of affairs is almost incomprehensible. If the publication of his formula is not warranted by the state of his investigations, the statements which are said to emanate from Koch are in the highest degree reprehensible, especially in view of the fact that it is said that Koch's assistants are absolutely coining money in the treatment of, according to one reporter, two hundred cases of tuberculosis daily. It is needless to say that such a state of affairs appears not to be without precedent, for it seems to be the general practice to protect all new remedies of German origin by trade-marks and patents. For an investigator of such eminence as Dr. Koch the line of procedure in the promulgation of his results is certainly most dubious. Should but a moiety only of his claims be founded on fact, we could, perhaps, for the great benefit which would accrue to mankind, overlook the manner of its introduction; but we must wait until we know what is being done, besides how it is being done, before we can place any reliance on the claim that a cure for tuberculosis has been discovered.

Since writing the above we have received the extra edition of the *Deutsche Medicinische Wochenschrift*, in which Dr. Koch's article, already referred to, has been published; but, with the exception that we must, with regret, admit that Dr. Koch is himself largely responsible for the statements alluded to, we find nothing in the article to cause us to change our opinion as to the mode and matter of his latter statements. No scientific value can be attached to the results claimed to follow the administration of a remedy which is only described as consisting of a "clear, brownish liquid, which, without any special precautions, is perfectly stable." *

AN OBJECTIONABLE RULE OF THE PHILADELPHIA BOARD OF HEALTH.

IT is hardly possible to frame laws for the protection of public health which will not work hardships in individual cases, and

* "Das mittel besteht aus einer bräunlichen klaren Flussigkeit, welche an und für sich, also ohne besondere Vorsichtsmaasregeln, haltbar ist."

while the majority of the regulations of most Boards of Health are wise and for the greatest good of the greatest number, there is one in force in Philadelphia that seems to be an exception.

The following case has recently come under our notice and is quoted in point:

A child, a resident of this city, went on a visit a few miles beyond the county line. While there it contracted diphtheria, and died on a Saturday. The parents were naturally anxious to bury the body in the family lot in a cemetery within the city limits. On application to the health office they were confronted with the following rule: "No body of a person who has died of any of the above-named contagious diseases—*i.e.*, Asiatic cholera, yellow fever, cerebro-spinal meningitis, small-pox or varioloid, diphtheria, relapsing fever, typhus fever, or scarlet fever—shall be brought into the city of Philadelphia for interment *without a special permit of the Board of Health.*" This rule in itself is a very proper one, but it is in the method of its execution that it is open to objections. The applicant for the permit was told that the Board of Health met only *once a week*, on Tuesdays, and no one in the health office had authority to act in the matter. The consequence was that the friends were compelled to keep the child's body from Saturday morning until Wednesday morning.

This certainly is in direct opposition to hygienic laws, and is entirely in opposition to the sentiment of the Board of Health in another rule, which says, "Burial (in cases of deaths from such diseases as mentioned above) to take place within thirty six hours."

It is quite possible that a body might have to be kept an entire week, unless the friends were willing to bury it in a cemetery out of the city limits. It does not seem to us that the community is exposed to any more danger from the passage of a body, dead from a contagious disease, from the city line to the burying-ground, than from the house in which the patient died in the city to the cemetery, particularly if the admirable requirements of the Board of Health as to the treatment of the body are carried out. These are, in brief, that immediately after death the body shall be completely enveloped (and remain so enveloped) in a sheet saturated with a four per cent. solution of chloride of lime, or a five per cent. solution of pure carbolic acid, or a .1 of one per cent. solution (1 : 1000) of corrosive sublimate, and be encased in a coffin or casket, the entire inner surface of which shall be thoroughly and completely lined with a layer of raw cotton of a thickness of not less than one inch, and the coffin tightly closed with screws, and remain so closed. Or the body, wrapped as above, shall be encased in a coffin or casket of metal, with all joints and seams closely soldered.

Of course, it is to the best interests of the community that no cases of contagious disease be brought into the city, and some legislation as to the importation of such cases would seem to be of far more value than the restrictions placed upon the burial of such as have succumbed in the immediate vicinity of Philadelphia County. This city covers such an enormous area, and there are so many families who live just beyond its limits whose interests are all here, that it seems an unnecessary cruelty to condemn them to the possibility of additional trial in the delayal of a funeral while waiting, possibly an entire week, for the Board of Health to grant the necessary permit. If the rule were an absolute one,—that *no* bodies dead from specified contagious diseases should be brought into the city, as is the case with the removal of bodies *from* the city, except for the purpose of interment in the adjacent rural districts,—much of the apparent hardship would be removed; but, where permission can be obtained on the specified day of the Board meeting, it does seem of doubtful utility. It is fair to say that during quarantine season the Board meets daily. The remedy, in our judgment, is to authorize the health officer or the chief clerk to issue a permit, when requested, on the days that the Board holds no meeting, and so do away with all complaints on this subject.

Reports on Therapeutic Progress.

FURTHER COMMUNICATIONS IN REGARD TO THE REMEDY AGAINST TUBERCULOSIS.

The following is a full translation of Koch's last article on the cure which he claims to have discovered for tuberculosis, which was published in the extra number of the *Deutsche Medicinische Wochenschrift* of November 14, 1890:

In an essay that I delivered some months ago before the International Medical Congress I mentioned a remedy which is able to render animals experimented on impervious to the

tubercle bacillus in the first instance, and in animals in which the disease had already begun, to bring the process to a stand-still. In the mean time experiments have been made with this remedy upon human beings, and their results may now be announced as follows: It was really my purpose to complete the experiments and to gain more experience in the use of the remedy in practice, as well as a greater knowledge of it in general, before publishing it. But, in spite of every precaution, too much of it has found its way before the public, and that, too, in a disconnected and exaggerated form, so that now, in order not to let any false impression be circulated, I feel myself forced to publish a paper, at the present state of affairs, in order to set myself right before the people. At any rate, an article just now must be brief, and leave unanswered many important questions. The experiments have been made, under my direction, by Dr. Libbertz and E. Pfühl, the latter being staff-surgeon; and they are, to an extent, still in progress. The necessary clinical material was furnished by Professor Brieger, from his polyclinic; by Drs. Fraentzel and R. Köhler, the former a physician and the latter chief staff-surgeon in the Charité Hospital; as well as by Herr Geheimrath von Bergmann in the surgical clinic of the University. To all these gentlemen, as well as to their assistants, who have been of such great assistance to me in these experiments, I would like at this point to express my deepest thanks for the lively interest they have shown in the subject and for the disinterested kindnesses which they have shown towards me. Without such varied assistance it would have been impossible to carry on such numerous and satisfactory experiments within several months.

I cannot just yet give an answer in regard to the origin and preparation of the remedy, but shall have to reserve this subject for a later communication.* The remedy consists of a clear, brownish liquid, which can be preserved without any special precautions. This liquid is to be more or less diluted for use, and the dilutions, even if they be made with distilled water, are liable to decomposition; they rapidly develop germs, become turbid, and are no longer fit for use. In order to guard against this, the dilutions are to be sterilized with heat, and kept protected by cotton-wool, or, what is easier, to be preserved by the addition of a five per cent. solution of phenol. By too frequent sterilization, as well as by too great addition of the dilution of phenol, the effect—that is, in too much diluted solutions—seems, in time, to be lessened, and I have, therefore, always preferred a freshly-made solution.

The remedy has no effect upon the stomach; in order to exert its effect it must be injected subcutaneously. We have used exclusively in our experiments a little syringe made by me for bacteriological work. This is provided with a small gum ball, and has no piston. Such an instrument can be easily and safely rendered aseptic by means of absolute alcohol; and we mention this fact, because in more than one thousand injections not a single abscess has arisen from its use.

After several trials in other places, we selected the skin between the shoulders on the back and in the lumbar region as the general seat of our experiments, because the injections in these places showed the least local reaction, and were almost painless.

Now, in regard to the effect of the remedy on man, it was noticed in the beginning that human beings differed very markedly in one important point from the guinea-pig, which is usually employed. Evidence was also obtained emphasizing the rule which experimenters cannot be too much impressed with, —viz., that, in making our experiments upon animals, we must not jump too hastily to the same conclusions in regard to men. Men proved themselves very much more susceptible to its effects than the guinea-pigs. A healthy guinea pig can receive subcutaneously from 1 to 2 cubic centimetres of the pure liquid without being visibly influenced by it. On the other hand, a healthy-grown man is very noticeably affected upon receiving .25 cubic centimetre in the same manner. In other words, calculating by the body-weight of the two beings, a man is markedly affected by $\frac{1}{1600}$ of the quantity which exerts hardly any influence upon the guinea-pig.

The symptoms, arising in men after an injection, I have experienced in my own person, having made an injection into my arm; and these symptoms were briefly as follows: In three or four hours after the injections there came on pains in the limbs, faintness, disposition to vomit, and dysp-

* Physicians who wish to make experiments with the remedy can obtain it from Dr. A. Libbertz (Berlin, N.W.), Lünebarger Strasse, 28 II.), who, with Dr. Pfühl and myself, has undertaken to furnish it. Yet I would add that the supply at hand just now is very small, and that, after a few weeks, it can be obtained in larger quantities.

nœa, and they rapidly increased; in the fifth hour there occurred a rigor, which lasted nearly sixty minutes; then there followed nausea, vomiting, and a rise in temperature to 39° C. About twelve hours afterwards all these symptoms abated. The temperature went down, and on the next day was nearly normal. Pains in the limbs and weakness continued several days longer; and, likewise, the places of the injections remained for quite a while slightly painful and reddened.

The lowest limit in the remedy that will produce any effect in healthy men is about .01 cubic centimetre, which is about one cubic centimetre of a one-hundredth dilution; and this was proved by many experiments. Most men reacted to these doses by experiencing only slight pains in the limbs and a faintness, which quickly passed off. In a few cases there was a slight ascent in temperature, which went up to 38° C., or even over.

When the animals we experimented on were compared as to their body-weight with men, there was a very marked difference between them, but in other respects they agreed pretty well.

The most important of its qualities is that of exerting a specific effect upon tuberculous processes, no matter of what nature they may be.

I shall not further discuss this remedy in connection with animals, but devote my whole attention to the most important subject of its relation to mankind. The healthy man either did not react, as seen above, when experimented on with .01 cubic centimetre, or did so very slightly. This fact, then, is of great value in proving when patients are not tuberculous. But it is seen entirely different with those who have the disease or those who are tuberculous. When the same dose of .01 cubic centimetre is injected into this latter class, it is followed by a severe local and systemic reaction.*

The latter reaction consists in a rise of temperature, which, beginning, as a rule, with a rigor, causes the body heat to go up to over 39° C., often to 40° C., and sometimes even as high as 41° C. We then noticed the pains in the limbs, irritation of the throat, great faintness, and often nausea and vomiting. At times there was a slight icteroid discoloration in some cases, as well as a breaking out upon the neck and chest of an eruption something like measles. The occurrence of the symptoms begins generally in from four to five hours after the injection, and lasts from twelve to fifteen hours. Exceptionally it comes on later, and then runs a milder course.

The patients were generally not troubled by the reactions, and, as soon as they were over them, felt better than they did before.

The local effect can be best observed in such patients as have tuberculous affections perfectly visible,—*e.g.*, in lupus. In these there are observed changes, which very surprisingly show its specific antituberculous effect. Some hours after the injection, which had been made in the skin of the back and in other parts remote from the local manifestation of the disease on the face, the lupus spots began to swell and redden, and that, too, generally before the coming on of the rigors.

During the fever the swelling and reddening increase, and may go on to such a marked degree that the lupus tissue becomes in places brownish red and necrotic. In the more sharply-defined lupus foci the much-swollen and brownish-red centres were surrounded by white bands one cubic centimetre in breadth, which, in turn, were bounded by a red margin.

After the decline of the fever, the swelling of the lupus spots gradually decreased, so as to vanish after two or three days. Those spots that have been covered with crusts formed by the serum gradually oozing out and drying in the air, change into scabs, which, in from two to three weeks, fall off, and leave a clean cicatrix after repeated injections of the remedy. Generally, however, it requires several injections for the complete removal of lupus tissue. But of this later. Also, it must be emphasized, that changes produced by the remedy were confined on the surface to those parts affected by the lupoid changes.

Even the smallest and most invisible tuberculous nodules concealed by tuberculous tissue come to light, and, in consequence of the swelling and change in coloration, are recognizable; while the real cicatricial tissue, in which the lupoid changes had entirely vanished, remained unchanged.

The observation of a case of lupus treated with this remedy is so convincing and instructive that every one is advised to begin his studies in reference to the specific nature of this remedy with experiments on a patient of this kind.

Less striking, but still sufficiently percepti-

* Children aged from 3 to 5 years received a tenth of this dose; very frail children were given only .0005 cubic centimetre, and this was followed by a severe but not alarming reaction.

ble to the eye and reason, are the local effects obtained in tuberculous diseases of the lymphatics, bones and joints, and other parts, in which swelling, increase of pain, and reddening of the surrounding tissues are to be seen.

The effect upon the inner organs—such as the lungs—is noticeable, if the somewhat increased coughing and sputa of the phthisical patient after the first injection be not attributed to its local effect. In such cases the general effect is the principal one. It must also be added that, in this instance, the effects are similar to those in lupus.

The reactions given above were noticed upon the administration of a dose of .01 cubic centimetre, so that I do not think that it is going too far for me to state that in future this remedy will be a *necessary aid in diagnosis*. We shall by this means be able to diagnosticate doubtful cases of incipient phthisis when it is impossible to arrive at a sure prognosis in reference to the disease, either by a discovery of bacilli or of elastic fibres in the sputa or by physical examination. By this means tuberculous affections of the lymphatics, concealed diseases of bone, and doubtful tuberculous affections of the skin may be easily and safely diagnosticated as such. In apparently worn-out cases of tuberculosis of the lungs and joints we shall be able to find out whether the disease has really stopped for good, or whether it is, like a dead coal, still lurking in the system, waiting for a favorable opportunity at which it may begin afresh. But its power as a remedy against suffering is even greater than that which it possesses for diagnostic purposes. In marking the changes produced by a subcutaneous injection of the remedy upon lupoid spots, it has already been observed that, after the vanishing of the swelling and reddening, the lupus tissue does not regain its original condition, but is more or less destroyed, and vanishes away. In various cases, judging from appearances, we find that the diseased tissue, after a thorough injection, dies, and is later thrown off as a dead mass. In other instances there seems to come on a shrivelling or melting away of the tissue, which, in order to be complete, requires the remedy to be very often repeated.

The process by which this is accomplished we cannot yet be sure of, since we are, as yet, unable to pursue our histological examinations to that degree of perfection. Only this much can be said with certainty,—viz., that the ulterior object to be obtained by the use of this remedy is not the destruction of the bacilli themselves, but only the tissue in which they dwell. Into this tissue we notice the entrance of the effects of the remedy by the marked swelling and reddening, as well as the great changes in the circulation produced by it, and the great changes in nutrition attributable to it, which processes must sooner or later destroy the tissues upon which they are at work.

To briefly summarize what I have written, I would state that the remedy does not destroy the tubercle bacillus, but the tuberculous tissue. But its power is not without limit in this direction. It is able to exert an influence only upon living tuberculous tissue. Upon such as is already dead—*e.g.*, dead, caseous masses, necrotic bones, etc.—it has no effect, and but a very limited effect upon such tissue as has been already destroyed. In these dead tissues bacilli may still remain alive, and such may be either crowded aside with the necrotic tissue, or, if the relations be favorable, they may again find entrance into the surrounding parts.

This quality of the remedy is also to be carefully studied if we would perfectly apply its therapeutic effect, and this is that the living tuberculous tissue be changed into dead matter, and then everything will contribute as speedily as possible to its early removal,—*e.g.*, by surgical methods; but where this is impossible, and the removal of the mass can be accomplished only by slow, natural processes of tissue-change, the surrounding parts are to be jealously guarded against the entrance of parasites.

Next in sequence, after the fact that the remedy destroys tuberculous tissue, and that, too, only when it is living, there naturally comes another valuable suggestion in reference to it, and that is that it can be given in rapidly-increasing doses. This fact might naturally suggest the danger of one's becoming habituated to the use of the injection. But when we remember that the administration of the dose extended over the space of about three weeks, and that during this time it was increased as much as five-hundredfold, comparing the incipient with the later doses, we see that there need be no apprehension of habituation,—a conclusion that is strengthened by the early onset and rapid amelioration of the symptoms.

It is still to be explained how that at first much tuberculous tissue is present; and, on the other hand, a small mass of real substance succeeds in producing a strong re-

action; but a certain quantity of tissue, capable of reaction, is destroyed by every injection. Then, again, within certain limits, there may be some danger of one's getting habituated to it. As soon as a tuberculous patient is treated with ascending doses until the effect becomes *nil*, then it is fair to assume that in his case all tuberculous tissue capable of reaction has been destroyed. Therefore, we must use precautions around the patient, so long as bacilli are still present in his body, so as to keep him more protected against any new infection, by the steady use of increasing doses of the remedy, with occasional intermissions. Only the future can show whether this premise and conclusion are right. They have been hastily gone over by me, in order thereafter to explain the manner of the use of the remedy, which, in our experiments, is as follows: In order again to begin with the simplest case,—namely, that of lupus,—we commenced, in nearly every instance, by injecting the full dose of .01 cubic centimetre. The reaction was then allowed to pass off, and after from one to two weeks the previous dose of .01 cubic centimetre was given, thus increasing until the reaction became less and finally ceased altogether. In this way the lupus spots, in two cases of facial lupus, were, by two or three hypodermics, made to present a smooth cicatrix; the other patients with lupus improved in proportion to the length of time they submitted to treatment. All these patients had been affected many years, and had before this been treated in various ways without success.

Tuberculous diseases of the lymphatics, bones, and joints were treated in a like manner, but with larger doses and at longer intervals. The result was similar to that obtained in the case of lupus. In new and moderate cases there was a rapid amelioration of the symptoms, resulting in recovery; in more severe cases the improvement was slower.

The case is somewhat different with consumptives, who constitute the majority of our patients; for when the latter are suffering with pronouuced cavities, they are far more susceptible to the remedy than they who have tuberculous affections coming under the head of surgery. We had, in the case of consumptives, to diminish very much the general commencing dose of .01 cubic centimetre, and found that these patients strongly reacted from a dose of from .001 to .002 cubic centimetre; but that this can be rapidly increased to the regular dose taken by other patients. We, therefore, began, in the case of consumptives, with the dose of .01 cubic centimetre, and this dose was daily repeated until it caused no reaction, though, at first, it was followed by a rise in temperature. Then the dose was increased to .02 cubic centimetre and kept there until it caused no appreciable effect, after which it was gradually increased .01 cubic centimetre and even beyond.

By proceeding in the above manner, it may be found that we can increase the dose gradually, with but a slight rise in temperature, and almost without the knowledge of the patient. This easy course seems the most advisable, especially in weak patients. Some stronger patients, however, were treated with larger or more rapidly increased doses, and the favorable effect seemed to follow more quickly. This latter was so pronounced in consumptives that, as a rule, the coughing and expectoration increased after the first injection; then decreased, and in favorable cases vanished altogether. The sputa also ceased to be purulent and became viscid. The number of bacilli—for only such patients are selected—generally decreased when this viscidity of the sputa appeared. They then vanished entirely, appearing only at times, until the expectoration ceased altogether.

In like manner the night sweats ceased, their appearance improved, and the patients increased in weight. The course of treatment in cases of patients with incipient phthisis lasts generally from four to six weeks, when their symptoms cease, and they may be considered well. Patients with not too large cavities are markedly improved and nearly cured. Only in such as had large cavities were no objective improvement to be marked, although the sputa decreased and they felt better. Therefore, with the above experience, I feel that I am justified in saying *that incipient phthisis is with certainty to be cured with this remedy.* Although this statement is applicable, to an extent, to cases not too far advanced.

But consumptives with large cavities, and in whom there are to be found most complications, caused by microbes and other pathological changes, receive a lasting benefit from being treated. It is, therefore, to be concluded that the disease itself is influenced in them in the same manner as in the less-affected patients, but that they are unable to cast off the dead tissue from the parts affected by secondary suppurative processes.

The question has been mooted as to whether many of these patients may not be benefited by the assistance of surgery, as in empyema, or by other therapeutic or hygienic means at our command. In answer to this, I would adhere to the present system being fully and somewhat diagrammatically carried out by its adherents in the treatment of tuberculosis. This plan may be best pursued in the treatment of incipient phthisis and in purely surgical tubercular affections, but all other forms of tuberculosis are to be treated only by medical means, being careful that each patient received such treatment as is best suited to his individual case. In many cases I have been persuaded that the care of the patient was of great importance, so that I would for this reason recommend the management of the patients in hospitals rather than by means of the home or out-door treatment. Of course, such methods of treatment as going to the mountains, living in the open air, and getting good food to eat, are naturally suggested in connection with the above mode of treatment; but I believe that this new method can be best combined with the former one in sanitariums, especially in old and aggravated cases of the disease.

The great difficulty, as said above, is in the early discovery of the disease. The first object of the treatment should be the perfect diagnosis of consumption, because the power of our remedy hinges on this. In future it will be the great aim of the physician to be certain about this fact as soon as possible. The discovery of tubercle bacilli in the sputa, which till now has been regarded only as an interesting and scientific means of confirming a diagnosis, and, as it was considered practically of no value, it was often omitted, is no longer to be regarded with indifference, but in all cases the sputa are to be carefully examined.

Any physician who, at the present time, with all the present means of confirming diagnosis, fails to examine the sputa, is guilty of neglect of his patient, because the life of a human being may be dependent upon the early discovery of this fact. In doubtful cases the trial of an injection as a means of confirmation is to be used.

The new remedy will be a true blessing to mankind when we can quickly diagnosticate tuberculosis in its early stages, while yet amenable to treatment, and not have to wait until it has gotten beyond our control and become an unfailing source of infection, as it has been in our forefathers and mankind to-day.

Finally, I would say that I have purposely omitted all statistics in these pages, because the physicians who have furnished me with clinical material, have kept the reports of their different cases, and I did not wish to intrude upon the material which they have selected for their own use.

DR. J. ROUSSEL'S TREATMENT OF PHTHISIS.

While the Berlin papers have been seriously discussing the hopes entertained that Dr. Koch's investigations may lead to the discovery of a remedy for tuberculosis, the Parisian press has diverted its readers with descriptions of a wonderful process by which Dr. J. Roussel is said to perfume the human body with such scents as that of the jasmine, the heliotrope, etc. The hypodermic injection of the essences of these plants would give to the breath and the exhalations of the skin the sweet savor of delicate flowers. Strange to say, the Parisian gossip and the scientific talk of the Berlin press are intimately connected one with the other. We need hardly remark that Dr. Roussel, the well-known physician who invented the instrument for the transfusion of blood, has not devoted himself to the art of perfuming beauties, professional or otherwise, of Parisian society. But he has taken up from the very first the principle of hypodermic injections for the treatment of a great number of diseases, and notably for phthisis. Perhaps, however, the fantastic stories related with regard to the perfuming of the body have arisen from Dr. Roussel's treatment of morphiomaniacs and inebriates of chloroform, ether, etc. To patients of this description he has suggested innocuous hypodermic injections of aromatic vegetable essences or perfumes, and has thus diverted the minds of such sufferers. But he has never advised any healthy person to practise hypodermic injections of scents or any other substance whatsoever.

Dr. Roussel's theory is that all the symptoms of phthisis are the efforts of nature to throw off the microbe which is destroying the system. The suppurations, expectorations, are nature's attempts to get rid of the invading bacilli. The high temperature burns the leucomaïnes, etc., that circulate in the blood; the abundant night-sweats, the diarrhœa, and surcharged urines are all so many modes of elimination. They are the arms which nature has given the human body to

expel those animal particles which have been rendered injurious by the invading microbe. Therefore Dr. Roussel maintains that true science rests in the use of such therapeutics as will attack only the microbe, and that we ought not to try to diminish the power of those weapons which our organism employs in self-defence. Rather should we seek to increase the vitality of the subject who serves as a field of battle between human life and the life of the microbes. But remedies swallowed injure and disturb the organs of digestion, and therefore weaken the patient, while they altogether fail to reach the lungs, where the microbes are located. General hygiene, constant ventilation, plenty of sunlight, and sanitary knitted woollen clothing are all strongly advocated by Dr. Roussel. When these are secured a general improvement in the condition of the patient is often noticed, and it is the good hygiene rather than the drugs given that secures such amelioration. To prove the efficacy of a drug, the improvement should take place when no alterations are made in the patient's surroundings and mode of life. This is what Dr. Roussel professed to have accomplished by conveying through the medium of the blood, direct to the lungs, antiseptics fatal to the life of the bacillus of Koch.

The method employed is simple, the practice easy, but the indications given must be rigorously observed, otherwise unpleasant accidents may result. Eucalyptol is Dr. Roussel's favorite antiseptic, which he uses in the proportion of twenty per cent. for his hypodermic injections. But if this or other medicaments are diluted in some substances very grave accidents may result. Dr. Roussel employs pure sterilized olive oil, as this is a substance not foreign to the usual nutrition of the human body. It is easily saponified and assimilated by the organism. This is effected as readily by the capillaries of the skin as by the digestive tube. But oils of a mineral base, such as petroleum, etc., are rejected as being artificial, irregular, and even caustic. The volatile essence contained in the sterilized olive oil travels with the blood till it reaches the lungs, and there, being placed in contact with the air the patient breathes, becomes diluted in the lungs, evaporates, and escapes with the breath. Thus the patient's breath smells of eucalyptol very shortly after the injection, and subsequently both the sweat and the urine have the same odor. When thymol is used, the odor is very pleasant, and several patients have been surprised and pleased to find how sweetly they were perfumed by this medical treatment.

Naturally the injections have to be taken for several months, as the perfumed effluvia must be absorbed; must, in fact, embalm the entire body, to preserve it, as that of a mummy, against the destructive microbes. The friends or nurse of the patient can easily be taught how to perform the operation. This, done systematically and persistently, will, Dr. Roussel maintains, kill the bacillus of Koch, especially if it be a case, not of inherited, but of contracted phthisis. The first cases treated in this manner by Dr. Roussel date as far back as 1883–84, and some of these patients have enjoyed good health ever since. A female patient of the late Dr. Fauvel, the eminent physician who presided at the International Congress of Hygiene of 1878, was sent to Dr. Roussel by Dr. Fauvel. Her right lung was affected, and numerous bacilli had been found in her sputa. The treatment commenced in January, 1883, and in January, 1884, the bacilli and all acute symptoms had disappeared; the patient gained weight, and has ever since been able to work, earning her living as a sempstress. This patient has been seen and examined by numerous physicians, and the case is interesting principally because it is one of the earliest on record. In the month of March, 1888, Dr. Roussel brought before the Society of Practical Medicine eighteen patients suffering from phthisis. In the month of March, 1889, he brought the greater number of the same patients before the Society, so that they might be examined by the same medical men who had seen them a year previously. These eighteen patients had received altogether four thousand seven hundred and fourteen hypodermic injections. One of the eighteen patients, who seemed to have recovered his health, started on a journey, contracted double pneumonia, and died. Drs. Tison, Guerder, Duchesne, Gaudin, Thermes, Boyer, Gronineau, and others examined, at the end of the year, fifteen or sixteen out of the eighteen patients. They all testified that the place where these numerous hypodermic injections had been administered remained in a perfectly normal condition. There was no inflammation. Dr. Dujardin-Beaumetz presided at this sitting, and a resolution was carried to the effect that the numerous injections of various substances had left no trace whatsoever. On the other hand, the patients were either to all appearances cured, or very greatly improved in health. In several instances the analysis of the sputa

showed that the bacilli of Koch had disappeared altogether. Apart from these particular cases brought before the Society of Practical Medicine, Dr. Roussel has some thirty double analyses of the sputa of his patients made either at hospitals or by eminent bacteriologists. The first of these two analyses for each patient shows that the bacilli of Koch abounded in the sputa. The second, made generally twelve months later, declares that the bacilli had disappeared.

In 1886, Dr. Benjamin Ball made experiments at the Laennec Hospital for Incurables, carrying out Dr. Roussel's system. Out of twenty-one patients, ten were able, after treatment, to leave the Hospital for Incurables and resume their work, five were still under treatment at the time these facts were reported by Dr. Ball to the French Academy of Medicine, six had died. Dr. Ball stated, in his report to the Academy of Medicine, that the hypodermic injections had a marked effect on the "septic" symptoms of phthisis, — namely, there was a cessation of night-sweats, of diarrhœa, a reduction of the expectoration and the fever, together with improved appetite. Dr. Ball could not affirm that a cure had been found for phthisis, as the experiments had not been made on a sufficiently extensive scale; but evidently there was good ground for hope.

On July 7, 1887, Dr. Roussel explained to the Society of Practical Medicine that one of the great obstacles to the diffusion of the hypodermic method was the imperfection of the instruments. The syringe generally used for the injection of morphine is altogether unsuited for constant treatment. The metal is too readily oxidized, and the instrument cannot easily be kept clean. Nor are the needles long enough to traverse the dermis. The liquid oozes out again through the channel pierced by the needle, and irritates the nerves and capillaries on the surface of the skin. Dr. Roussel employs a syringe made of celluloid,—a substance composed of camphor and cellulose treated by nitric acid. Hard, transparent, unbreakable, non-porous, it cannot be affected by the metalloids and alkaloids used for hypodermic injections. The needles are of steel, covered with platinum, and four centimetres in length. They carry the liquid under the cutis as far as possible from the puncture on the skin. By the nature of the instrument employed, by the antiseptic precautions taken, by the easy assimilation of the vehicle—sterilized olive oil—in which the medicament is diluted, all accidents that might otherwise result from the constant practice of hypodermic injections are avoided. These latter practical considerations are, he considers, of the utmost importance, for many failures have attended this mode of treatment, not because it was wrong in principle, but because it was clumsily applied.

During the Medical Congress, held in Berlin last August, Dr. Roussel went to the Charité Hospital, and there performed many hypodermic injections on patients suffering from phthisis, to show how this could be done without inconvenience or accidents. Whatever may be the secret of Dr. Koch's treatment of phthisis, Dr. Roussel claims that, since 1883, he has, with marked success, treated this malady by hypodermic injections of metalloids and alkaloids. Dr. Roussel also has not hesitated to supply Dr. Koch, in response to the inquiries made by the eminent German professor, with full details as to his mode of procedure. In fact, there is no secret whatsoever in Dr. Roussel's system; the profession are welcome to make every inquiry, and he is ready to show everything, even his patients, to competent investigators.

Such are the main features of Dr. Roussel's claim to be heard on the question of the possible remedy for phthisis. In this description of the facts and arguments adduced by Dr. Roussel there is no attempt at criticism. The sole purpose in view is merely to state Dr. Roussel's case, for it cannot fail to be of interest when so many hopes are being awakened as to a possible remedy for phthisis.—*Lancet*, November 15, 1890.

PREVENTIVE INOCULATION IN TUBERCULOSIS.

The experiments of Koch have been calling attention anew to the preventive inoculation of tuberculosis, but it is not in the least a new field, for since it was first demonstrated that artificial immunity against acute infectious diseases could be conferred by this method, the possibility of the successful application to tuberculosis has occupied the minds of investigators.

In the *Medical Record* for November 22, 1890, DR. E. L. TRUDEAU publishes a paper on this subject, in which he shows that Dr. Falk, in a communication to the Medical Society of Berlin, was about the first to describe his attempts at preventive inoculation in this disease by means of tubercular virus attenuated by contact through fine material.

A. Marfan, in 1886, suggested the possi-

bility of attaining success by this method from clinical facts he had observed relating to the protective influence of healed lupus and scrofulous glands. H. Martin, in 1887, Raymond and Arthaud, and others, more recently, have described their attempts and experience in this line of investigation.

The improvements made in the technique of laboratory methods and the encouraging results which have recently been obtained in protecting living animals by preventive inoculation against a number of bacterial diseases has prompted investigators to renewed studies in this direction.

If we have been taught by the extended researches of the past years the difficulties which must beset the direct destruction of the tubercle bacillus in the tissues of man and animals by germicidal methods, we have also learned that a living organism possesses many and mysterious powers of resistance, that the margin between susceptibility and immunity, whether purely biological or chemical, is often a very narrow one, and that the most promise at present seems to lie in the study of nature's laws of immunity and in learning how far we may influence and imitate these. Immunity from disease being a part of the unsealed riddle of life itself, the study of its mechanism has ever been beset with apparently unsurmountable difficulties, and an exact knowledge of its laws as yet escapes us. Immunity from microbic diseases is usually a natural attribute of the living organism in which it resides, but we now know that, so far as certain infectious maladies are concerned, it may be conferred artificially, and this may be said to be true of variola and hydrophobia in man (if this be a microbic disease), and of anthrax, chicken cholera, and some forms of septicæmia and hog cholera in animals.

In tuberculosis mere physical vigor is no doubt a prominent element in the mechanism of immunity; indeed, it is the only element we can as yet seize, clinical observation and experimental research bearing ample evidence to the favorable influence which all external conditions of environment tending to increase bodily vigor invariably exercise over the prevention and course of the disease, and to the close association which exists between depressed vitality, with its cellular degeneracy and tubercular infection.

It is not, however, the only element, for it is in the prime and vigor of adult life that the disease displays its greatest activity, and strong men, whose tissues are apparently well nourished, at least so far as we can judge by the external appearance, frequently succumb to acute tuberculosis in a short time, while many debilitated and delicate individuals, living under the worst possible hygienic surroundings, and whose nutrition is constantly at the lowest ebb, never suffer from this disease. There appears to be, therefore, over and above the element of physical vigor, a natural immunity against natural means of infection in tuberculosis, as in all other infectious diseases,—an immunity possessed to a different degree by different individuals and species of animals, and which is quite sufficient for their protection, no matter at how low an ebb their physical vigor may chance to be. Whether we believe that immunity is due to the germicidal power of blood-serum, to the phagocytic activity of the cells, to purely chemical reactions intimately connected with the biological life of the tissues, to an unsusceptibility of the nerve-centres to the poisonous products of the microbes, to a combination of these elements, or to some factor as yet unknown, it is evident that the margin between immunity and susceptibility is a very narrow one at first, that some trifling chemical or biological variation in the tissues is capable of turning the scales for or against infection, and some hope would seem to lie in the possibility of artificially inducing this condition of resistance in them. Acquired immunity is established naturally by a previous attack, artificially by some form of inoculation. From a mass of more or less contradictory testimony regarding immunity by inoculation, we may seize this one prominent fact,—namely, that there resides in the living organism a certain power of habituation to noxious influences, one of the simplest expressions of which is to be found in the tolerance to poisonous drugs which may be brought about by graded doses, and the most complex in the protection afforded by vaccination. In variola, probably in hydrophobia, and in the group of diseases of animals against which protection can be artificially conferred, an immunity as complete, though not as lasting, as that established by a previous attack, may be obtained by some form of inoculation. All successful methods of inoculation so far rest upon the application of what, owing to our ignorance, we can as yet only designate in a vague way as the law of habituation, the virus which gives protection being generally either an attenuation or a modification of the same which causes the disease. In one instance this artificial protection will be induced by an artificially-modified or attenuated microbe;

in another, apparently by the chemical and metabolic products which the growth of the virulent microbe develops. Thus, in the septicæmia of guinea-pigs and in hog cholera the soluble products of the microbe's life-history, so far as the limited evidence at hand shows, prove an efficient protection in these animals against subsequent and repeated injection of the most virulent cultures; in chicken cholera the attenuated bacteria alone give protection, while in anthrax both the soluble products of the virulent germs and the attenuated microbe can render certain animals immune.

How universal is this law of habituation, through whose operation living beings can at will be rendered invulnerable to these deadly maladies? Is its protecting influence limited to the more active or rapidly fatal infectious diseases, or may it extend as well to the more chronic forms, such, for example, as tuberculosis? Certainly there has not in the clinical history of tuberculosis seemed to be much to foster the hope that any method of preventive inoculation is likely to be successfully applied to this disease; but some encouragement to investigation in this line may be derived from the possible universality of the law of adaptation to noxious influences generally, from the brilliant achievements of the past years in the field of vaccination, and from the recent improvements in methods of conferring artificial protection.

Can the tubercle bacillus, or the soluble products of its life-history, when treated according to the teachings of modern science, be made to confer any degree of immunity against this disease? To collect and present some evidence on this point has been the object of the present study.

Modern methods of protective inoculation aim at obtaining virus mainly in two ways: 1. By securing the soluble products of the microbe's life-history freed from living germs. 2. By the production of an attenuated germ.

In the first series of experiments a non-living complex chemical substance was introduced as a protecting agent; in the second series, a living but attenuated germ.

SERIES I. — *Inoculation of Chemical Substances.*—In this set of experiments three forms of material were made use of,—1, surface cultures of tubercle bacilli, which, through the influence of heat and light, were dead, and refused to grow on the usual culture media; 2, liquid cultures of tubercle bacilli grown for a month and then sterilized by heat; 3, liquid cultures of tubercle bacilli freed from living germs by filtration through a porcelain filter. These substances were injected subcutaneously into fifteen rabbits, divided into three equal lots.

Lot 1.—Dead Surface Cultures.—Five rabbits received on three occasions, at intervals of four days, subcutaneously, 4 c.c. of dead surface culture suspended in distilled water in sufficient amount to make an opaque turbid emulsion. No disturbance of temperature or health followed; no abscess or irritation at the site of injection was noted; the animals were kept for six or seven weeks, when they were injected in the lung with ½ c.c. of slightly milky emulsion of living virulent tubercle bacilli.

Lot 2.—Sterilized Liquid Cultures.—Having grown pure cultures of tubercle bacilli in glycerin-peptone bouillon for a month, and proved their purity microscopically, the flask containing them is steamed for an hour. The liquid, in which are suspended the dead germs, is then cooled and injected, with antiseptic precautions, into the subcutaneous tissue of five rabbits, to the amount of 6 c.c. for each animal. These injections are repeated on five occasions, at intervals of five days, increasing gradually the amount to 12 c.c. to each animal. The subcutaneous introduction of this liquid was followed by a marked rise of temperature and by a trifling, but temporary, irritation at the site of puncture; not a single abscess occurred, and the rabbits, when inoculated with virulent culture four weeks from the last vaccination, were apparently in good condition.

Lot 3.—Filtered Cultures.—Having grown pure cultures of tubercle bacilli in glycerin-peptone bouillon for a month, and proved their purity microscopically, the entire contents of the flask is filtered with very slight pressure through a porcelain Pasteur filter. The clear filtrate proved free from germs, as shown when planted in fresh bouillon tubes, and two animals injected with this liquid and killed three months later presented no tubercular lesions. Injections of this filtered fluid, in the same amounts and at the same intervals as in the preceding lot of animals, were made in five rabbits. These gave rise in the animals to the same elevation of temperature which was noted in Lot 2, injected with sterilized liquid cultures. The temperature, usually about 102⅛° to 102½° F. at the time of the injection, falls a little during the first hour, then rises shortly until the fifth hour to between 106° and 107° F. It maintains itself at this high point until the eighth or tenth hour, when it slowly returns to the normal. Control rabbits, however, injected with the same

quantity of fresh glycerin-peptone bouillon show a rise nearly equal to the one described, and which presents an almost identical curve. This, coupled with the fact that large amounts of fresh surface cultures, when mixed with sterilized water and injected subcutaneously, give but a trifling rise of temperature, makes it questionable whether this high temperature may not be almost entirely due to the peptones and salts contained in the bouillon. No irritation occurred at the site of puncture, which was done antiseptically, though in the last injection 12 c.c. of the fluid were introduced at a time. No abscess and no permanent toxic symptoms followed, and the animals, which had been kept over two weeks after the last injection, were in excellent health when, together with their mates, they submitted to the final inoculation with fresh cultures. On the same day (February 22) all these rabbits,—Lots 1, 2, 3,—together with five fresh ones as controls, were inoculated in the right lung with ½ c.c. each of a suspension of tubercle bacilli in bouillon. Two months later the controls were killed, and the autopsies of the other animals—Lots 1, 2, 3—followed as rapidly as possible, extending over a period of less than two weeks. The results are briefly told: All the rabbits are more or less tubercular; the lesions of those in whom this preventive inoculation was practised differ from those observed in the controls but little, except that in the rabbits previously injected with the filtered cultures (Lot 2) the disease is somewhat more advanced. The experiment relating to this set of animals was, therefore, repeated in precisely the same way as before, except that the interval between the last preventive inoculation and the virulent inoculation was only three days. Four animals were used. Two months later, the two rabbits which had undergone the protective treatment were found to bear tubercular lesions appreciably further advanced than the controls.

The second set of experiments relate to preventive inoculation with a living but attenuated microbe. Our knowledge of the conditions necessary to either diminish or increase the natural virulence of the tubercle bacillus is still very fragmentary. Roux, Nocard, Yersin, and all the experimenters of Pasteur's school have stated that cultivation in glycerinated media so increases the virulence of Koch's bacillus that a germ is thereby obtained capable, upon intravenous injection, of killing rabbits with great regularity in eighteen to twenty-four days, the animals presenting a peculiar form of septic tuberculosis. Dr. Trudeau has never been able to produce in the ordinary rabbit for sale in our markets here the type of disease these investigators so ably describe, nor has he noted any marked increase in the pathogenic properties of the tubercle bacillus when it is cultivated in glycerinated media. Cultures which he has been able to make directly from the lesions of acute miliary tuberculosis in the human subject have not differed to any appreciable extent in their effects on animals from tubercle bacilli obtained from other sources. All attempts on the author's part at systematic attenuation of tubercle bacilli by placing them in an unfavorable environment have proved nearly as unsuccessful. Under what manipulation he has so far brought to bear on them individual cultures have been often so nearly killed as to lose much of their pathogenic power, but this could not be regulated with any degree of certainty, and failed to be reproduced with any regularity in subsequent generations; either the microbes would refuse to grow entirely, or the subsequent plants which grew soon regained their usual virulence.

Many pathogenic microbes when transferred from a parasitic to a saprophytic existence adapt themselves readily to their altered surroundings, which produce in them two important changes,—they grow more easily and abundantly in culture media, and they lose to a greater or less degree their power to maintain themselves in living beings; in other words, their virulence.

The tubercle bacillus, on the contrary, seems to adapt itself with some reluctance to a saprophytic existence, and is with great difficulty robbed of any degree of its virulence. Dr. Trudeau's observations in this particular coincide with those made by Dr. Koch, who found that, after having led an uninterrupted saprophytic existence for eight years, cultures of tubercle bacilli, under his observation, remain the same, save for a very slight diminution of virulence. What he failed, however, to accomplish by his own efforts chance all at once put in his way and furnished him with what was apparently an attenuated tubercle bacillus. Among a large number of tubes on his thermostat, in January, 1890, Dr. Trudeau noticed that in several, all having the same origin (the lesions of a guinea pig caused by the scrapings of an old phthisical cavity), a marked cultural variation had appeared. This he ascribed at first to contamination, but careful double staining proved the cultures to be pure. These tubes were presented, in April and May, 1890, to the New York Patho-

logical Society and to the Association of American Physicians, describing at that time their biological peculiarities, which consisted in a well-defined and constant cultural variation and in a great diminution of natural virulence. Rabbits inoculated subcutaneously with these cultures present after four months only an indolent localized lesion at the site of injection and no visceral disease. The cheesy abscess thus caused often grows to great size, and shows no tendency to open externally; as time goes on, it generally loses its cheesy character, becomes gelatinous in appearance, and tends often slowly to disappear, the animal still continuing free from visceral disease. Intrapulmonary injections of small amounts produce in rabbits a localized tubercular process, with little tendency to spread, or spreading very slowly in rare cases, and which is often entirely recovered from. Intravenous injection of moderate amounts of this attenuated germ gives rise to no appreciable disease, while intraperitoneal inoculation of large quantities is usually fatal. In guinea-pigs tuberculosis, running a very slow course, is brought about by all the above methods of inoculation, except by subcutaneous injection, which generally results only in a localized cheesy abscess similar to that caused in rabbits, but showing a much greater tendency to open and discharge itself externally. Whether this attenuation was due to the origin of these bacilli, or to the varied conditions of their surroundings while under cultivation through many generations, it is impossible at present to determine; but these constant cultural peculiarities and their enfeebled virulence seemed to warrant the assumption that the microbes in question were an attenuation of the tubercle bacillus, and these cultures were, therefore, used in the following experiments to produce a mild and localized form of the disease, and determine whether they would afford protection against a subsequent virulent inoculation.

SERIES II.—*Experiment A.—Inoculation of Living Virus.*—Four guinea-pigs were injected under the skin of belly with an old liquid culture (A) of the above described attenuated bacilli in glycerin-peptone bouillon, and a week later again with a fresher culture (B) of a month's growth, just taken from the thermostat, where it had been grown at irregular temperatures, ranging from 34° to 44° C. Plants of both sets of cultures—A and B—in fresh bouillon, showed six weeks later abundant growth from Culture B, and from Culture A in only one of the three tubes planted. The animals were kept five weeks, when they appeared in excellent condition, but all presented a small unopened abscess at the site of the second preventive inoculation, without any enlargement of the lymphatic glands. Two of them (Lot A) were then, together with two fresh animals as controls (Lot B), injected under the skin of belly with ½ c.c. of a virulent culture of the tubercle bacillus suspended in distilled water, while the remaining two animals (Lot C), which had been subjected to the protective treatment alone, were kept to determine the effects of the attenuated culture. All the animals were killed six weeks later. The results were as follows:

Lot C (simply subjected to protective treatment).—Both guinea-pigs present a small ulceration where the attenuated culture has been injected; in the first animal the spleen is a little enlarged, and two gray tubercles are visible in the right lung; in the second animal all the organs are perfectly normal.

Lot B (controls).—Both animals are markedly tubercular and present ulcerated cheesy abscesses, cheesy inguinal, mesenteric, and bronchial glands, very large tubercular spleens, and young tubercles scattered through liver and lungs.

Lot A (having undergone preventive and subsequent virulent inoculation).—Both animals are profoundly tubercular, perhaps a trifle more so than the controls whose autopsies are briefly recorded above.

SERIES' II.—*Experiment B.*—This experiment was a repetition of the last one, only the protective inoculations were made with surface cultures of the attenuated bacillus grown on glycerin-peptone agar, instead of liquid cultures, as in Experiment A, Series II. The first preventive inoculation was made on six guinea-pigs with an old surface culture four months out of thermostat; the second, a week later, which a fresh one grown at irregular temperatures from 34° to 44° C., and whose viability was proved by plants on fresh culture media. After having been kept five weeks, the animals showed very trifling indurated spots at the site of injection, and were apparently in good health. Two of them (Lot A) were kept to control the preventive inoculation; and the four others (Lot B), together with four fresh controls (Lot C), were injected under the skin of abdomen with a suspension of virulent tubercle bacilli in distilled water. Six weeks later all the animals were killed.

Results.—Lot A.—Simply subjected to protective inoculation. One animal presents a small, open ulceration at the site of vaccination, with one slightly enlarged inguinal

gland; all the organs in both animals are perfectly healthy.

Lot B (controls).—All markedly tubercular, cheesy abscesses, cheesy glands, spleen, liver, and lungs riddled with tubercle.

Lot C (injected first with attenuated and subsequently with virulent cultures).—All tubercular; one only moderate, the other three are more extensively diseased than the controls.

SERIES II.—*Experiment C.*—This experiment was merely a repetition of the last two,—A and B, Series II.,—and was made for purposes of confirmation and control. Sixteen rabbits were used; ten (Lot A) were injected twice, at intervals of seven days, with a fresh surface culture of the attenuated bacillus grown at a constant temperature of 37° C. At the expiration of four weeks they presented prominent abscesses at the site of injection, but were otherwise in good condition. They were then, together with six controls, inoculated in the vein of the ear with 1 c.c. of virulent tubercle bacilli suspended in distilled water. Eight weeks later they were all killed within a few days of each other. The animals who had undergone preventive inoculation (Lot A) all had large, indolent abscesses at site of injection with the attenuated material. When killed, all the rabbits present the lésions of miliary tuberculosis of the lungs in varying stages of development; the other organs are sound. Both lots are about equally tubercular.

Summary of Experiments.—Results.—In Series I. preventive inoculation of the non-living chemical products of the life history of the tubercle bacillus failed, when applied, as above described, to afford any protection against subsequent infection with virulent living tubercle bacilli.

In Series II. preventive inoculation with an attenuated but living germ, capable of producing in most cases only an indolent and localized tubercular process at the site of injection, failed to protect against subsequent inoculations with virulent tubercle bacilli. No immunity seems to have been conferred by a saturation of the system which the chemical substances evolved by the microbes during their growth in artificial culture media, or by the production of a mild form of the disease. It must not be forgotten, however, that the methods of preventive inoculation which have formed the ground-work of this study are merely tentative and in a field in which we can as yet but grope our way. They may seem crude even now, and, in the light of our rapidly-advancing knowledge on this subject, they will soon appear even more so than at present. Nevertheless, merely as a biological study of the tubercle bacillus, these observations seem perhaps worthy of record, and we may, in spite of the unpromising evidence which they have brought forth, turn to the brilliant announcements recently published, with a strong hope that the resources of foreign laboratories, or the individual efforts of some earnest worker, are about to solve the problem of protective inoculation for this disease, even if the genius of Koch, reaching out along new lines, has not already succeeded in producing a specific treatment for the cure of tuberculosis.

THE CURABILITY OF ACUTE PHTHISIS.

The term acute phthisis is frequently used in a very vague manner, and is applied to cases which have no title whatever to the appellation, as any one can very readily satisfy himself by the perusal of the medical journals. In a paper delivered before the Western Infirmary of Glasgow, PROFESSOR MCCALL ANDERSON describes the cases of acute phthisis which he believes to be curable, not cases merely of a short duration, nor chronic phthisis associated with more or less fever, nor those which, while running their course, suddenly develop acute symptoms, but cases of phthisis setting in suddenly, with high and continuous fever, great prostration, and profound involvement of the system, reminding one rather of typhus or a severe attack of typhoid fever than of a pulmonary affection. Indeed, in some instances it may be necessary to watch the course of the disease for some days before an absolute diagnosis can be made, so that the term "galloping consumption," used by many of our leading authorities, although not a scientific one, conveys to the mind a most accurate impression of the kind of disease with which we are dealing.

Such cases are comparatively rare, and are only exceptionally met with in hospital practice; not only on this account, but because the patients are supposed to be too ill to be removed, or, if removed, they are fully as likely to find their way into a fever as into a general hospital.

There are two forms of acute phthisis,—(*a*) acute tuberculosis and (*b*) acute pneumonic phthisis.

In acute tuberculosis tubercles are more or less copiously disseminated throughout the lungs, and often also in other organs. But

the symptoms of acute phthisis do not appear unless or until these foreign bodies produce congestion or inflammation of the pulmonary tissues, and, if the patient lives long enough, breaking down of the lung-tissue may occur here and there, with the development of small excavations. That the infiltration of the lung with tubercles does not necessarily lead to acute phthisis is proved by the occasional discovery, post-mortem, of obsolete tubercles scattered through the lungs in the case of those who never experienced pulmonary symptoms during life.

In acute pneumonic phthisis the disease exhibits almost from the first a more or less extensive consolidation, most frequently of the upper lobes, which often spreads to other parts, and, instead of resolving in a week, like a croupous pneumonia, leads to rapid and wide-spread destruction of lung-tissue, which soon terminates the life of the patient.

A perusal of the literature of the subject leads to the opinion that the authorities are very hopeless in regard to the prospects of sufferers from this disease, and, while Dr. Anderson states that he has read numerous records of fatal cases, he has never met a carefully recorded case fulfilling the definition of acute phthisis, as he understands it, in which a complete restoration to health occurred; and, while many hold that acute tuberculosis is the more certainly fatal of the two, Dr. Anderson is rather inclined to the opinion that acute pneumonic phthisis is probably the more dangerous, as it leads to such rapid and wide-spread destruction of pulmonary tissue.

Dr. Anderson states that he has notes of seven cases, all of which were treated in a similar manner, and that of the seven, five recovered. Of the two fatal cases, one was beyond the reach of recovery when he came under observation, his lungs being extensively disorganized, while in the other instance the fatal issue was due to the complication of perforation of the lung. The author maintains in the most positive manner that, if acute phthisis is treated early and energetically, the prognosis is far from gloomy. The following is an outline of the kind of treatment upon which, according to Dr. Anderson, reliance may be placed, although, of course, no two cases can be treated exactly in the same way. Each patient and his surroundings must be specially studied before deciding on the line of action.

The principal indications are—1, to keep up the strength; 2, to keep down the fever; and, 3, to treat any special symptom or complication which may arise.

1. Two thoroughly-trained and reliable nurses are indispensable, one for day and the other for night duty; for without admirable nursing no hope of improvement can be entertained; and the hygienic and other surroundings of the patient should be satisfactory, so that we need not be surprised that, when the disease occurs in the homes of the working-classes, it is almost necessarily fatal, and that hospital patients have the best chance of recovery. The patient must be fed constantly on fluid food (soup being avoided if diarrhœa is present) both day and night, and stimulants (from ℥ii to ℥x) are required early in the attack, but should be given in small quantities, frequently repeated, and along with the food. In fact, the dietetic treatment should correspond with that of a case of fever, presenting symptoms of a similar degree of severity.

2. At bedtime a subcutaneous injection of sulphate of atropine (grain $\frac{1}{100}$ to grain $\frac{1}{60}$) is given. This checks perspiration when present, acts as a sedative to the system, indirectly helps to reduce the fever, and diminishes the secretion from the lungs.

3. Remedies are given with the view of lowering the temperature. This is a point of the utmost consequence, because the majority of the patients die consumed by the fever. Some benefit is derived by allowing the sufferer to suck ice freely, by giving the food and drinks iced, by sponging the body with iced vinegar and water, or even by using iced enemata. But Dr. Anderson's main reliance is upon one or more of the following methods:

a. Niemeyer's antipyretic pill or powder every four hours, containing grain 1 quinine, grain ½ to grain 1 digitalis, and grain ¼ to grain ½ opium. The proportion of opium may even have to be increased beyond this if there is much diarrhœa. The effect of the digitalis must be carefully watched, and it must be omitted for a time if the pulse becomes preternaturally slow and irregular and the secretion of urine very scanty.

b. The administration daily—particularly shortly before the temperature tends to be highest—of from 10 to 30 grains of quinine, given, as suggested by Liebermeister, either in a single dose or, at all events, within an hour.

c. The application of iced cloths to the abdomen for half an hour every two hours so long as the temperature exceeds 100°. The application of iced cloths is made in this way:

The night-dress is pulled well up over the chest, so as to avoid any possibility of its being wet, and, for a similar reason, a folded blanket is placed across the bed under the patient's body. The usual bed-clothes are arranged so that they reach up to the lower part of the chest only, which latter is covered by a separate blanket in order to prevent unnecessary exposure while the cloths are being changed. Two pieces of flannel are employed, each being sufficiently large when folded into four layers to cover the whole of the front and sides of the abdomen. One of these, wrung out of iced water and covered with a piece of dry flannel to protect the bed-clothes, is applied, while the other is lying in a tub of iced water at the side of the bed. The pieces of flannel are changed every minute, or so often that they still feel cold when they are removed. The changing of the flannel, particularly when two persons are in attendance,—one to remove the bed clothes and the flannel, the other to apply the piece which is freshly iced,—can be accomplished in a few seconds.

THE TREATMENT OF HÆMOPTYSIS.

In the Harveian Oration for this year, DR. ANDREW calls attention to certain most important considerations of intravascular pressure; more particularly he refers to the work of Dr. Bradford and Mr. Dean on the pulmonary circulation. There can be no doubt that the comparative independence of the two circulations—the pulmonary and systemic—has been generally overlooked, and that it has been assumed without evidence that those means which are capable of influencing the systemic circulation will act similarly upon the pulmonary. The recent physiological work above referred to has shown the presence of a pulmonary vaso motor system, which, though apparently less developed than the corresponding systemic mechanism, is capable of exercising a decided control upon the flow of blood through the lungs; it has further shown that great pressure changes may occur within the systemic vessels without corresponding changes in the pulmonary blood-pressure. Clearly it is necessary to review the situation of vascular therapeutics from the stand-point of this latest advance. Dr. Andrew next gives the results of experiments by Dr. Lauder Brunton, and of others by Dr. Bokenham, in which the influence of various drugs was brought to bear on the circulation generally. These experiments confirmed the results of the above investigators, showing, as they did, oscillations in blood-pressure in the two circuits, which, at least in their time relations, were independent of each other. At the close of the oration, Dr. Andrew draws one conclusion, which, on account of its importance, must be quoted. He says, "If it be true, to use the statement in one of our best monographs on diseases of the lungs, that 'it is of great importance to relieve blood-pressure in hæmoptysis,' then aconite ought to be a much more efficient remedy for that affection than ergot."

This statement calls for most careful consideration, and has been made the basis of a note published by DR. H. SAINSBURY in the *Lancet* for November 8, 1890. In the first place, we may note that this claim for aconite as a means of arresting hæmoptysis is not made because of any different action upon the lung circulation from that with which we are familiar in the case of the greater circulation; for Dr. Andrew points out that aconite produces a fall in blood-pressure in both the pulmonary and carotid arteries. If, then, aconite is to act thus upon the lungs as a hæmostatic, will it not act similarly upon the systemic tissues; and may not a more comprehensive statement be advanced,—viz., that in cases of hemorrhage generally, aconite, as a means of lowering blood-pressure, is indicated? In discussing this it will be best, for the sake of clearness, to deal with one circulation only,—*e.g.*, the systemic. What are the factors concerned in a bleeding? On the one hand, the rent in the vessel; on the other hand, the *plus* pressure within the vessel. This intravascular pressure is itself the product of two factors,—the action of the heart; the reaction or resistance of the vessels, and this resistance is greatest at the periphery of the arterial tree. Now, does not the whole question of the treatment of hemorrhage, viewed as a *mechanical problem*, turn upon the position of the rent in the vessel? Let us suppose this rent to be in some artery of large size, what will be the effect of giving a drug of the ergot or digitalis group? Clearly to force the blood out by the rent, since we impede its flow through the arterioles. As clearly it must appear that if any treatment is called for in such a case, it will be one which will lower blood-pressure and accelerate the production of syncope. But suppose now that the leakage takes place from the capillaries, an oozing on a large scale, what evidence have we that ergot or

digitalis, given in such a case will cause an increased pressure within the capillaries,—*i.e.*, at the bleeding-point? The rise of blood-pressure takes place between the arterioles and the heart, and it will not exceed, though it may fall short of, that which is requisite to force the blood through the contracted arteriole. Is not the evidence physiological and clinical to the effect that the arterioles may be starved by an excessive action of a drug of this class? and that such drug, therefore, is indicated in capillary hemorrhage?

Now, place the rent in the arteriole area, and what will ergot or digitalis effect? The blood-pressure will rise, it is true, but the bleeding vessel itself will contract. Whether under these circumstances bleeding will continue or be checked will depend upon the predominance of blood-pressure over contraction of the rent, or *vice versa*, and this will depend upon whether the rent is situated too near the heart or sufficiently near the capillaries. In this doubt we shall halt between the employment of means which favor syncope and those which raise blood-pressure by arteriole contraction. To pass to the lungs, may we not reason in the same way concerning the circulation through them, seeing that this circulation has now been shown to be under the control of a vaso-motor system? Dr. Andrew urges that the effect of a given drug may not be the same, even qualitatively, on the lungs and on the systemic tissues, and he instances amyl nitrite, nitroglycerin, and muscarine as examples of such dissimilarity of action. But while the evidence in favor of this might be more conclusive, there is no such dissimilarity in the action of ergot or of digitalis upon the two circulations. Dr. Andrew states this explicitly. If, then, in hemorrhage from the systemic circulation we see indications at times for the use of ergot and digitalis, may we not look for benefit from their timely use in certain cases of pulmonary hemorrhage? Is not the main difficulty in the treatment of hæmoptysis the fact that we cannot look inside and see whether we are dealing with hemorrhage from a vessel of some size, very possibly from an aneurismal dilatation, or whether it is a capillary hemorrhage which we have to check? Until we are able more successfully to determine these points, it is to be feared that hæmostatic treatment will at its best prove random treatment; but even so, we are scarcely justified in discarding ergot and digitalis, because we cannot always select the cases for which they are indicated.

GUAIACUM AS A PURGATIVE.

In our thirst for new remedies there seems to be a danger that some of our good old-fashioned drugs will be forgotten. Guaiacum is an illustration of this, for in most of our text-books on therapeutics we are told simply that guiacum resin acts as "a stimulant, diaphoretic, and diuretic," although there is but little evidence in support of this view.

Dr. William Murrell, however, believes that its action is as a laxative or purgative, and in the *Medical Press* for November 5, 1890, he writes that his attention was drawn to the subject some two years ago by casually prescribing for a man suffering with rheumatism some guaiacum lozenges made up with black-currant paste. He continued taking them long after the pain had ceased, and his explanation was that they did him good by acting on the liver and bowels. As a consequence, Dr. Murrell ordered the lozenges for other of his patients suffering from constipation, and what is conventionally called "biliousness," and the result was equally satisfactory. He then had a confection prepared containing ten grains of guaiac resin to one drachm of honey, and this was curiously popular with his hospital patients, so that for the last two years he has used it extensively not only as a purgative but in chronic rheumatism, sciatica, tonsillitis, dysmenorrhœa, and allied affections. The confection is very disagreeable to the taste. At first he gave it in drachm doses once a day, but he found that his patients were not satisfied with this, and he had to increase the dose to a drachm three times a day. In this quantity, Dr. Murrell writes, "It seems capable of producing the maximum of inconvenience and discomfort, and gives unlimited satisfaction. The purgative effect is very pronounced, and in one case the patient had fifty-six evacuations in the week. In another case it produced a well-marked rash, covering the arms and legs with an eruption, which forcibly reminded one of copaiba. It was accompanied by intense itching, which disappeared on discontinuing the drug."

Dr. Murrell has found that guaiacum not unfrequently gives rise to a burning sensation in the throat, and to obviate this he prescribed ten grains of the resin in half an ounce of extract of malt, which answered admirably. Dr. Murrell believes that if the drug was triturated with cream of tartar, sugar of milk, or some other equally inert substance, its efficacy would be increased, and it would produce the desired effect in smaller doses.

THERAPEUTICS OF GASTRIC DYSPEPSIA.

M. GEORGES contributes (*Revue Médicale de l'Est*, September 1, 1890) a paper on this subject, based on a number of experiments he has made on the relative digestive powers of natural and artificial gastric juices. Cubes of hard-boiled white of egg were placed for a certain length of time in an artificial gastric juice containing HCl and pepsin in varying dilution. He finds—1. That to effect a speedy and satisfactory digestion of hard-boiled egg, or of roasted and raw meat, it is necessary to use a gastric juice containing a large quantity of HCl and a minimum quantity of pepsin. 2. The hydrochloric acid ought to be employed sufficiently dilute; a .4 per cent. dilution appears to be preferable to one either weaker or stronger, such as .1 per cent. to .2 per cent. or 1 per cent. 3. The best proportions of HCl (.4 per cent.) and pepsin are about five cubic centimetres of acid to two centigrammes of pepsin. 4. It is necessary to employ the artificial juice thus made in sufficient quantity to obtain the best result. Thus, if the above proportions of acid and pepsin be taken as the unit, it may be said that the digestive power of the juice increases with the quantity employed, and that the increase is in the proportion of 12 to 8. This only applies, however, within certain limits. A combination of forty cubic centimetres of a .4 per cent. solution of HCl with eight to ten centigrammes of pepsin gives the best results of all.

His observations on the digestive capabilities of natural gastric juice were made on one hundred and forty-two specimens taken from sixty-nine patients. In eight cases of "chlorotic anæmia" the contents of the stomach were found on eighteen occasions to have no digestive power at all; on two occasions they possessed a slight power; and on one occasion digestive power was normal. In each of these cases the addition of pepsin failed to modify the digestive action; in one instance, indeed, it appeared to delay it. The addition of HCl, on the contrary, had a very marked effect in twelve cases, but was without result in eight cases. Of all the degrees of dilution employed, .4 to .6 per cent. of HCl gave the best results. In nine cases of gastric ulcer the digestive power of the gastric juice was found to be excellent on nineteen occasions and absent altogether on ten. In these ten instances pepsin was found to be hurtful in its action on three occasions, while HCl (.4 per cent.) restored the digestive power on six occasions. Analogous results were obtained in ninety-two specimens of gastric juice obtained from fifty-two different cases, including such affections as tabes, catarrhal jaundice, acute and chronic gastritis. In eighty-seven of these ninety-two the gastric juice was without digestive power. The addition of HCl (.4 per cent.) proved useful in forty-six cases, while pepsin entirely failed, even impeding the digestive process, on twelve occasions. The result, therefore, of the observations on one hundred and forty-two samples of gastric juice was that one hundred and fifteen were found without digestive power. In all these cases pepsin had no action, appearing sometimes to be even hurtful (sixteen times). The conclusion he draws from these data seems, then, justified,—namely, that pepsin is useless where the dyspepsia is due to some primary or secondary disturbance in the gastric secretion, while hydrochloric acid can be used with advantage in such cases. A further series of observations on the digestive power possessed by various medicinal preparations containing as their basis hydrochloric acid, pepsin, pancreatin, or papaïn, showed that they were without action in all cases; they did not facilitate digestion either in the case of artificial or of natural gastric juice.—*British Medical Journal*, October 25, 1890.

A CASE OF TETANUS TREATED WITH ESERINE.

DR. GEORGE H. LEE reports in the *New Orleans Medical and Surgical Journal*, October, 1890, the case of a married woman, aged 23, in whom marked tetanus resulted nine days after abortion. At this time there developed the stiffness in the muscles of the jaws, which spread to other muscles and increased in degree until the jaws were tightly fastened together, and she was continually in a condition of opisthotonos. The peculiar risus sardonicus was marked, and every few minutes, upon the slightest irritation of any kind, the most violent muscular contractions occurred. Her tongue was lacerated, swollen, and bleeding from being caught between her teeth. Temperature, 100.8°; pulse, 110. There was a discharge from the vagina, which had a very disagreeable odor. For several days all her nourishment had to be administered through a tube by means of a space left by a lost incisor. Morphine was given hypodermically in doses of ⅓ to ½ grain, and produced temporary and partial

stupor, but at no time was there any relief of the tetanic contractions aside from what could be traced to the blunting of the sensory nerves, and thus the lessening of external irritation. Eserine was administered hypodermically the first day, consisting of $\frac{1}{20}$ to $\frac{1}{12}$ grain, little effect being noticed; hydrate of chloral, 1 drachm, 25 minims tincture of gelsemium, and 15 minims of tincture digitalis were given by the mouth, and afforded some relief. The dose of eserine was then gradually increased up to ⅛ grain, then ½ grain, repeated every four hours, until on one day one grain of eserine was administered and four grains of morphine. It was noted that where the dose of eserine was sufficient to produce its characteristic effects, it thoroughly and promptly relieved the rigid convulsive symptoms and likewise the pain. It is also of interest to note that, with the subsidence of the tetanic symptoms, the tolerance of eserine disappeared, so that fifteen or twenty minutes after the administration of eserine she developed symptoms of the most decided collapse, marked prostration (so as to render active stimulation necessary), with nausea, vomiting, and purging, closely resembling cholera morbus. During the height of the tetanic condition the patient was anæsthetized, and the vagina thoroughly douched with a mercuric chloride solution, 1 to 2000, the os and cervix widely dilated, and the uterine cavity scraped out with a blunt curette, and washed out with the hot 1 to 2000 solution, followed by a 1 to 6000 solution same salt. The patient had commenced to improve before this washing out of the uterine cavity was practised, but after this the improvement continued and was more decided. One hundred and forty-nine hypodermic injections in all were administered, and there was never the least inflammation produced. Perfect recovery took place, although for some time after the tetanic attacks had ceased risus sardonicus was present, which finally subsided under hot injections. A few lymphatics of the neck were enlarged.

THE TREATMENT OF WHOOPING-COUGH BY VACCINATION.

DR. CACHAZO noted in a case of whooping-cough under his care that almost immediately after vaccination there was a striking relief in the whooping-cough, and this observation led him to test the action of the vaccine virus in five extremely severe cases of whooping cough, and his results are published in the *Wiener Medisinische Blätter*, October 16, 1890. Of these five cases four were of such extreme severity as to threaten life. The convulsive attacks were almost continuous, and were accompanied by threatening suffocation from vomiting and bleeding from the mouth and nose. Dr. Cachazo vaccinated each of these cases, and, as soon as the febrile symptoms of the vaccination commenced, the situation was entirely altered. The coughing almost entirely ceased, and was then simply of a catarrhal character, and disappeared entirely after eight or ten days. During the existence of the vaccine disease the patients were treated with inhalations of one per cent. carbolic acid solution, a procedure which, he thinks, is warranted, on account of the observation of Theile, that the microbes in this disease do not exist deep in the mucous membrane, but are superficially located in the mucus, so that the antiseptic readily reaches them and causes their death.

As regards the mode of action of the vaccine microbe, the author has very little definite to suggest. He calls attention to the two possibilities that either the febrile symptoms in vaccination are due to the distribution through the body of the vaccine microbes, or that the action of these microbes terminates in the development of certain products which themselves produce the characteristic effects of vaccination. But as to how the whooping-cough is affected he has nothing to suggest.

THE RELATION OF NASO-PHARYNGEAL DISEASE TO CATARRH OF THE MIDDLE EAR.

At the meeting of the American Rhinological Association, held at Louisville, Ky., October 6, 7, and 8, 1890 (*New York Medical Record*, October 25, 1890), DR. EMMETT WELSH, of Grand Rapids, Mich., contributed a paper on this subject. He said the relationship existing between naso-pharyngeal disease and catarrh of the middle ear was intimate and inseparable. The ear depended upon a healthy condition of the nares and naso-pharynx for the healthy performance of its function. Patients presenting themselves for the treatment of ear-diseases always give the story of catarrh, located in the nose and throat, and date their primary impairment to this condition; therefore it becomes essential to not only become familiar with the speculum,

the rhinoscopic mirror, the catheter, Politzer bag, etc., but also to detect the diseases of the nares and naso-pharynx, its inflammations, obstructive lesions, and measures for their removal.

The existence of a spur upon the septum may be the means of exciting a tinnitus aurium, and how useless direct medication to the ear would be without its removal. It would be erroneous for the rhinologist to ignore the large number of aural complications he meets with in daily practice. This is very apparent, indeed, when we consider that the larger proportion of abnormal changes that take place in the ear result from those diseases of the naso-pharynx which produce narrowing or obstruction of the Eustachian tube.

Repeated attacks of subacute otitis media can be found in cases directly referable to some mechanical obstruction or inflammatory condition of the naso-pharynx. Its relief is dependent upon this causation, and its treatment plain; yet how often do we find that this is not detected, and the uselessness of direct medication to the ear patent.

This is best illustrated in cases of children, who, suffering from recurrent attacks of otitis media, are presented for examination and treatment; when on inspection, the membrana tympani is found inflamed, the child suffering from difficulty in breathing, and mouth-breathing predominating, the nares inflamed, and an adenomatous growth existing at the vault of the pharynx.

All treatment with a view to correcting the inflammation of the ear is useless, and the only plan is medication of the nares and the naso-pharynx.

THE TREATMENT OF LEG ULCERS BY THE ITALIAN AUTOPLASTIC METHOD.

Professor Paul Berger recently presented before the French Academy of Medicine two patients whom he had cured of leg ulcers, which had resisted every other mode of treatment, by the Italian autoplastic method (*La France Médicale*, October 17, 1890). In one of these patients the ulcer, probably of syphilitic origin, was circular; the retraction of the subcutaneous tissues caused interference with the circulation in the lower third of the leg, and so caused persistent œdema of the foot, trophic alterations in the skin and contractions causing permanent flexion of the toes and immobility of the foot and ankle-joints. Amputation appeared to be the only feasible operation, but after four successive operations, continued for eighteen months, Dr. Berger was able to entirely renew the normal integuments throughout the entire circumference of the leg, and the ulcer was cured by transplantation of four large cutaneous grafts provided with their cellular tissue, and removed from the thigh on the same and on the opposite side and from the leg. The pedicle of these grafts was only divided on the twenty-first day. Trophic troubles of the feet and the affections of the joints were overcome, and the part was then quite restored to its normal condition.

Dr. Berger insists that the object to be fulfilled by such transplantation of cutaneous grafts was not only to obtain a firm cicatrix, but to provide normal integument with cellular tissue, so as to do away with the adhesion of the scar to the parts below. In this way cicatricial retraction not only of the ulcer, but of the parts below, and its consequences, is obviated and renders possible the excision not only of the ulcer but of the parts upon which it rests. The author claims that neither the transplantation method of Reverdin nor that of Thiersch gives comparable results, but that for the Italian method of grafting to be successful it is necessary that the limb from which the graft be taken be itself healthy, and that the general condition of the patient itself be good. The operation best succeeds in young subjects, but is of little value in true varicose ulcers.

The second patient had incurable ulcers on both legs in the centre of an extensive contracted cicatrix from burns. Dr. Berger also cured this case by transplanting a portion of skin from the thigh of the corresponding side, the leg being maintained in forced flexion until adhesion was well established when the pedicle of the graft with the original seat on the thigh was divided; the result was perfectly satisfactory: the author states that the opposite leg will shortly be operated on in the same manner.

THE THERAPEUTICS OF EXOPHTHALMIC GOITRE.

At the meeting of the New York State Medical Association, held October 22, 23, and 24, 1890, Dr. E. D. Ferguson, of Rensselaer County, read a paper with this title. Exophthalmic goitre, he said, was not a common disease, and yet it was not so rare as to render it a curiosity. Though the disease was one with sufficiently well-defined characteris-

tics to allow of its ready recognition, still errors of diagnosis might, and doubtless did, occur. The fact was that enlargement of the thyroid body was not peculiar to the disease, and that a frequent pulse was attendant on a multitude of morbid conditions, and occasional prominence of the eyes might be added from causes not the same as the condition determining the development of exophthalmic goitre. The conclusion that the condition was not at any rate a pathological unit had been strengthened, in the judgment of the writer, by the results of the use of digitalis, for in every instance in which he had felt confident of the diagnosis that drug had not only failed to afford relief, but was apparently productive of injury. The writer then gave in detail the histories of several cases of exophthalmic goitre treated with strophanthus. The administration of this had afforded prompt relief, the patients being able to return to their ordinary occupation. In no instance had either the exophthalmia or the goitre been entirely removed, and, so far as the latter was concerned, the author would not expect its removal, for when the enlargement had existed for some time it became of so dense or fibrous a consistence as to preclude the idea of its complete removal. There was, however, a notable degree of improvement both in the exophthalmia and in the thyroid body, but it was impossible to express in mathematical terms the changes in these features of the disease so well as could be done in the rate of the pulse. Not only were the rate and rhythm of the contractions favorably influenced, but in these cases there undoubtedly existed a dilatation of the left ventricle, which improved so as to leave no physical or symptomatic evidence of cardiac lesion. Recent pathological considerations tended to place exophthalmic goitre in the category of the neuroses, and the locus of its origin in the floor of the fourth ventricle. Still, the evidence was not such as to give any clew concerning its etiology or treatment, aside from clinical observations, and consequently there was no explanation to offer as to the method by which strophanthus afforded relief, aside from the idea that first suggested its use, and that was to relieve an apparently overtaxed heart through the lessening of the resistance in the systemic circulation which was alleged to be its action. Aside from any theoretical consideration as to the way in which the agent acted, the fact remained that benefit was apparently the direct result of the use of strophanthus,—a benefit so notable as to almost justify the announcement of a cure in some of the cases. The only preparation used by the writer was the tincture, given by the mouth, three times daily at each meal, the initial dose being from 8 to 10 drops, which was increased, if necessary to reduce the frequency of the pulse, to 15 or 20, or even 25 drops. Whether its apparent utility would bear the test of time and larger experience was still problematical. At present it seemed to be our most valuable therapeutic resource in exophthalmic goitre. —*New York Medical Journal*, November 8, 1890.

THE PHARMACOLOGY OF CHLORALAMIDE.

In the graduation thesis of St. Petersburg, 1890, Dr. Malackowsky reports a number of experiments which he has made on cold-blooded and warm-blooded animals to determine the physiological action of chloralamide (*Les Nouveaux Remèdes*, October 24, 1890). He employed for his experiments a five per cent. watery solution, which he administered by means of subcutaneous injections and by way of the mouth. The following are the results he noted after the administration in cold-blooded animals of ⅓ to ¾ grain:

1. Immobility and disturbed co-ordination attributable to cerebral lesion.

2. Diminution and abolition of reflexes attributable to action on reflex centres of the spinal cord.

3. Slowing and finally arrest of the respiration, probably of central origin, since both the respiratory nerves and muscles retain their normal excitability.

4. Slowing and arrest of the heart, in consequence of stimulation of the peripheral inhibitory apparatus.

5. In the last stages of poisoning there occurs paralysis of the motor apparatus and the cardiac muscle.

Given in doses of 11 to 15 grains chloralamide produces death in the frog within a few minutes. As regards the results obtained on warm-blooded animals, the effects of the administration of a five per cent. solution of chloralamide are summarized by the author as follows, as expressing the results of sixty-five experiments made on dogs and rabbits:

1. Chloralamide produces sleep as the result of its action on the brain.

2. It diminishes the excitability of the brain.

3. It diminishes the excitability of the spinal cord.

4. It prevents the production of co-ordinated movements by its action as a depressant on the central nervous system.

5. The interference with the production of reflexes is attributable to its action on the reflex centres.

6. It lowers blood-pressure through paralysis of the vaso-motor centre.

7. It reduces the frequency of the pulsation of the heart through action on the cardiac inhibitory centre.

8. It reduces temperature, and this is due partly to the increase in heat-dissipation and partly to the diminution in heat-production.

9. It produces various forms of functional disturbance in the gastro-intestinal apparatus of the dog.

TREATMENT OF INFLAMMATION OF THE VERMIFORM APPENDIX.

According to the Paris correspondent to the *Medical Press and Circular* for October 29, 1890, M. BERGER introduced before the Société de Chirurgie the subject of ileo-cæcal inflammation, the diagnosis of which, he said, was often uncertain. He had observed several cases during the course of the year of perityphlitis. These were operated on and died. The only one which was not surgically treated got well. In one case the patient was brought to the hospital evidently suffering from peritonitis due to perforation. The abdomen was greatly distended, the fæces abdominal, the extremities cold, and the pulse imperceptible. In spite of the critical and hopeless condition of the man, M. Berger determined to perform laparotomy. When the abdomen was opened, a quantity of liquid of an opaque color flowed out, and on passing the hand towards the right iliac fossa the vermiform appendix was found to be swollen and evidently inflamed. When drawn forward a perforation was discovered at its point. The man succumbed a few minutes after the operation. Another case was that of a boy of 16, who, in going to his work one morning was seized with violent pain in the right iliac fossa. Brought home, a doctor diagnosticated peritonitis from intestinal occlusion. His condition not improving from treatment, M. Berger was sent for, who found the lad in a very grave condition. Besides the symptoms met with in the first case there was vomiting of something like fæcal matter. An operation was decided upon without delay, as strangury was suspected. The incision was that for ligature of the external iliac artery, and a large collection of pus was discovered in front of the cæcum. When the appendix was brought to view a stercoral calculus was found to occupy its middle third. Above this obstacle was a perforation of the size of a lentil. The patient succumbed on the following day. In conclusion, M. Berger said that it was clinically impossible to diagnosticate between perityphlitis and inflammation of the appendix, but M. Roux, of Lausanne, in an important work on inflammation of the appendix, believes it possible to diagnosticate perforation of that part from simple inflammation. In the former, he says, the pain comes suddenly, like a pistol-shot in the right iliac fossa, the peritonitis follows immediately the first symptom, and a tumor of about the shape of the vermiform appendix. As to the conduct to be observed in such cases, M. Berger said that no hesitation should be made where perforation was suspected. M. Richelot said that rapid intervention was necessary, and that in the case of a woman the diagnosis was especially difficult.

TRANSPLANTATION OF MUCOUS MEMBRANE.

DR. E. DJATSCHENKO concludes his experimental investigation as to the condition in which transplantation of mucous membrane is advisable by the following conclusions, which have marked practical value to the surgeon (*Internationale Klinische Rundschau*, October 26, 1890):

1. The transplanted fragment must be closely applied to the surface to which it is desired that it shall adhere, and bleeding must be absolutely arrested, and all coagulated blood entirely removed before the transplanted piece is applied.

2. Before transplantation, the piece of mucous membrane must be washed in sterilized one-half per cent. salt solution at a temperature about 99° F. No unfavorable effects are produced even should the piece lie in this solution for an hour and a half.

3. All adipose tissue must be carefully removed with the scissors from the lower half of the transplanted fragment, and the entire submucous cellular tissue must not be cut away, otherwise the conditions for the restoration of the circulation of the transplanted fragment will be unfavorable.

4. Although the transplantation must be performed in an aseptic condition, the stronger disinfectants cannot be used either on the

excised fragment or on the surface on which transplantation shall take place.

5. The transplanted fragment must exactly fit the surface on which it is applied in order to prevent the production of a cicatrix.

6. The transplanted fragment must be carefully protected from drying.

PHOSPHORUS AND RICKETS.

According to the Berlin correspondent to the *Medical Press and Circular* for October 22, 1890, DR. MANDELSTAMM has lately published in Wracz his observations on the treatment of rickets by small doses of phosphorus. He points out—what, indeed, is well known—that the views of clinicists are still very divergent as regards the utility of this method of treatment. Some, and among them may be mentioned Monti, Lorey, Henoch, and Baginsky, deny that it has any action at all, and even affirm that it is injurious. Others, again, such as Kassowitz, Bohn, Förster, and Soltmann, declare that phosphorus is the best remedy we possess for rickets. Careful clinical observation on the subject is, therefore, a matter of great importance. The author's observations extend to two hundred and sixteen cases, of ages varying from 3 months to 3 years, in addition to eighty other cases, where the affection was so mild as to be easily overcome by other means. The phosphorus was given in doses of .005 to .001 gramme per diem, dissolved in almond oil, and continued for from a month to a year. Of the two hundred and sixteen thus treated, complete recovery took place in one hundred and twenty, forty-three were considerably improved, in thirty no result followed, and in twenty-three the treatment had to be discontinued, owing to the intercurrence of other disease. Assuming that rickets was a general disease, the author observed not only the bony system, but also growth and weight of the body, and the measurements of the head and chest. As the whole of the cases were furnished by the poorer classes, the author claims that, considering the deficiency in the hygienic and dietetic relations, the improvement may be fairly accredited to the phosphorus. The author claims, as the result of his observations, that the following theses are established: 1. That clinical observation fully justifies the employment of phosphorus in rickets. 2. That it acts better and more rapidly than other remedies. 3. Children bear small doses of phosphorus for long periods without injurious consequences. 4. The remedy is acknowledged to act beneficially on the nervous accompaniments of rickets, and contributes to the improvement of the general health. Periodic measurements and weighing of the children treated by phosphorus, as well as the osseous system, show that this treatment in the majority of cases leads to recovery.

While on the subject it may be well to turn to another contribution to the subject of rickets in the *Kinder Arzt*, May, 1890, by DR. TEDESCHI, Padua. The writer attributes the disease to certain centres of the nervous system, and he had been led by his views to treat the disease by galvanization of the medulla spinalis. After treating one hundred and seventy-four cases by his method, and forty-nine simultaneously by the phosphorus method, he makes a comparison of the two series, and comes to the following conclusions: Phosphorus is generally not well borne; rapid action in the ossification of the skull and the other bony affections has not been proved; the undeniable beneficial action of phosphorus when it can be borne is due to improvement in the general and nervous condition of the patient; after galvanization the night-sweats disappeared after three or four applications, and sleeplessness became less; in most cases the laryngeal spasm quickly disappeared, and the pain in the bones disappeared at the same time. It could not be shown, however, that the thickening of the epiphyses became less under the influence of the galvanic treatment.

THE TREATMENT OF INFANTILE DIARRHŒA WITH STERILIZED MILK.

In a paper read before the Société Médicale des Hôpitaux for October 10, 1890, DR. COMBY read a paper on the "Treatment of Infantile Diarrhœa by Means of Sterilized Milk" (*La Médecine Moderne*, October 10, 1890). Dr. Comby stated that in Paris the number of deaths from infantile diarrhœa may be safely estimated at four thousand yearly, and that these deaths are not only dependent upon variations in temperature, but are much more abundant among the poorer classes, a fact which is dependent not only upon unhygienic surroundings, but especially upon a premature feeding of young children, and with poor quality of milk employed in artificial feeding. Dr. Comby states that he has in the dispensary with which he is connected occasion to see a large number of children affected with diarrhœa, and he has undertaken their treat-

ment by simply prohibiting the vicious qualities of their alimentation. This he has accomplished by feeding them exclusively with sterilized milk. The results, he states, have been in the highest degree satisfactory. Fifty-six children, from 1 to 2 years of age, affected with diarrhœa, in the majority of cases of a fairly severe character, were treated solely by this mode of alimentation, and, with the exception of twelve, who did not return after the first visit, forty-four were observed, of whom thirty were cured in a few days and fourteen greatly improved. The preparation of this milk constitutes a special business in Paris, and although the precise method of sterilization is guarded as a secret, there yet seems to be no doubt that it consists in the method commonly employed elsewhere in boiling the milk in a steam bath, and then hermetically sealing the flasks, which so prepared may be kept for several months. In Paris, as in the majority of other large cities, it is difficult to obtain fresh cow's milk of good quality and perfectly aseptic. By the use of sterilization any fair sample of milk may be used almost with perfect confidence if previously sterilized before being administered.

In the discussion which followed the reading of Dr. Comby's paper, DR. OLLIVIER made the statement that while there was no doubt that sterilized milk was to be regarded as a great advance in alimentation, yet most of the specimens of sterilized milk on the market were loaded with substances with the idea of preserving it from decomposition, and that such substances might in themselves prove very serious menaces to the patients, while in addition its expense, which was nearly one hundred per cent. greater than fresh milk, was an objection to its general employment.

It seems that the numerous cheap apparatus which we use so much for sterilizing milk for family use are unknown in Paris.

HYDATID TUMORS.

At the meeting of the Canadian Medical Association, held September 9, 10, and 11, 1890 (*New York Medical Record*, October 25, 1890), DR. H. H. CHOWN, of Winnipeg, after referring to the origin and formation of these growths from the larval stage to their development in the form of tumors, found sometimes in the liver, peritoneum, brain, lungs, or in the muscles, described the further development of the cyst and its contents. The heads of tænia echinococcus are found in the various stages of development, and were often sufficiently numerous to render turbid the usually clear fluid contents. These growths gave rise to a variety of symptoms, varying according to the position and size of the tumor. For example, if in the liver, we have jaundice, ascites, anasarca, œdema, varicose veins, or paroxysmal pains; if in the lungs, cough, dyspnœa, or hæmoptysis; if in the abdomen, vomiting is a prominent symptom, with pain after each meal. Change was continually going on in these cysts, and either calcareous degeneration, absorption of fluid, or suppuration might occur. Cases are reported where rupture took place into the intestine, the bronchi, bladder, uterus, and into the peritoneal cavity. An exploratory operation was the only means by which a positively correct diagnosis could be made. Microscopical examination of the fluid aided in distinguishing the contents from urine and other fluids. Dr. Chown concluded his interesting paper by describing the different methods of treatment. These were: 1, electrolysis; 2, puncture and drainage; 3, incision; and, 4, excision. The second method was the one most commonly employed, and by it, the contents being expelled, the cyst collapses and absorption is rapidly set up. Success generally followed this method of treatment, which was particularly adapted to tumors of moderate size, and in some of those tumors in the liver, lungs, or spleen. Incision is performed when the tumor is within the peritoneum, with the precautions always observed in such operations. Enucleation became necessary in some cases. The paper concluded with an interesting history of the case of a man, 30 years of age, from whom sixteen separate cysts had been removed from different portions of the abdominal cavity.

THE RESPIRATORY FUNCTIONS IN HIGH ELEVATIONS.

From time immemorial physicians have sent their patients affected with chronic pulmonary troubles to the mountains or to the sea-shore, with the object of causing them to respire a purer air, and experience has demonstrated the value of this procedure in the improvement in such cases, especially after a sojourn in the mountains.

Professor Jorlanini has called attention to the fact that it is not only necessary for the patients to live in the mountains to obtain these effects, but that they should adapt their

life to the mode of living of mountaineers. For those who go to the mountains and live a sedentary life rarely experience any improvement in their condition. These ideas were the starting-point of a long series of researches of Dr. Riva-Rocci, of which the following *résumé* expresses the most important conclusions (*Bulletin Général de Thérapeutique*, October 15, 1890):

Contrary to the opinion generally held, mountain air does not influence the respiration on account of any difference of barometrical pressure. It is, however, true that, in accordance with physiological laws, during repose the respiratory function appears less active on the mountains than on the plains, both from a mechanical point of view and from the point of view of chemical change. This fact is, however, attributable to a sort of compensation which follows the excessive respiratory activity developed during exercise. The happy influences of mountain life depends especially on the enforcement of the respiratory activity which is dependent upon climbing and other physical exercises. In passing to elevated heights there is at first an exaggeration of all the respiratory mechanism and an increase in the frequency and depth of the respiration acts, with, of course, consequent increase of the mechanical function of the lungs. Then, on descending after such a climb, almost the same effects are observed, though in a somewhat less degree. On the other hand, during the periods of inactivity, the destructive and eliminating functions being diminished, mountain life favors the organism in aiding the reintegration and reassimilation of the materials (with increased appetite and digestive power) introduced into the organism. As a consequence, from the influence of this action of mountain life on the respiratory function, the author believes that such a mode of living is indicated in all those who are threatened with pulmonary phthisis, whether congenitally or acquired. In sending phthisical cases to the mountains it is not necessary to insist upon great elevations,—that is, above the line at which the existence of phthisis ceases. On the other hand, the author believes that the locality should be selected in which the nature of the ground will oblige patients in taking exercise to ascend to heights proportionate to their organic power and the strength of their heart. In other words, it is the climbing which the author believes to be especially important, and that mountain air by itself is of little more value for phthisical cases than the air of the lowlands, unless the life on the mountains be adopted to the locality. In other words, the author concludes by this statement, that to obtain the best effects from mountain life it is indispensable that the patient live as a mountaineer, and not to sit down and quietly wait the more or less problematical effects of the pure and revivifying air alone.

SOME NEW CLINICAL EXPERIMENTS WITH DIURETIN.

Koritschoner has recently made numerous clinical trials at the medical clinic of Professor Schrötter, of Vienna, with the new diuretic, *diuretin*, which is a mixture of sodium salicylate and theobromine. These experiments pertained to thirty-eight cases of general dropsy. Ten of these were cases of cardiac dropsy from chronic valvular disease; twelve were cases of dropsy from Bright's disease in some stage; in six the general anasarca was due to dilatation of the heart following emphysema or arterio sclerosis; in four the cause of the dropsy was degeneration of the myocardium; in three it was hepatic cirrhosis; in two it was tuberculosis of the lung and serous membranes, and in one cancer of the liver.

The formula which Koritschoner uses is as follows:

> Salicylate of soda and theobromine, 4 to 8 grammes;
> Warm water, 150 grammes. M.
> Dose.—A tablespoonful every hour or every two hours.

Diuretin should be given in rather large doses; little benefit can be expected from a less quantity than 4 grammes (60 grains) a day; ordinarily, to get the full advantage of the drug, medium doses amounting to 5 or 6, and maximum doses amounting to 8 or 10, grammes in the twenty-four hours should be administered.

Diuretin is generally well supported, even when its use is prolonged for months. It rarely causes nausea, even in chronic Bright's disease when the appetite is gone and but little food is tolerated. It does not cause vertigo; in rare instances patients complain of palpitation and temporary cardiac distress. Sometimes diuretin provokes diarrhœa.

As a result of these trials by the Vienna physician, the salicylate of soda and theobromine was found to be a very powerful diuretic, and in only five cases did it prove to be without action; these were cases of chronic Bright's disease, arterio-sclerosis with fatty

myocardium, tuberculosis of the lungs and serous membranes; all had arrived at the last degree of cachexia, and succumbed a few days after their admission to the hospital. In ten other cases, the action of the salt was much superior to that of digitalis, acetate of potash, and all other diuretics that had been administered, though but moderate benefit followed the administration of the remedy. In the majority of the patients (twenty-three out of thirty-eight) the effect obtained was excellent, the dropsical effusions rapidly disappeared, and general amelioration followed. There is even danger that, under the influence of the abundant diuresis caused by the drug, the ascites and œdema may disappear so speedily as to cause dangerous collapse. On this account, Koritschoner urges 'that, in cases of abundant effusions, the remedy should be given with considerable caution; he would, in fact, advise always to begin the treatment by a dosage of 4 grammes a day, and, if this quantity makes no sensible increase in the urine, it may be augmented by one gramme a day till a sufficient result is obtained.

The diuretic action of this medicine is said to be more marked in cardiac dropsies than in renal or hepatic, yet it may render precious service in chronic Bright's disease. In fact, in this disease, where all the ordinary diuretics are apt to fail, the quantity of urine excreted often becomes augmented five or six times under the influence of the salicylate of soda and theobromine. In some cases of Bright's disease, the remedy seems to exert its principal action on the intestines, producing an abundant serous diarrhœa, which, in a very short time, causes the œdema to disappear, without too great enfeeblement of the patient.

According to the researches of Schrœder and Gram, the diuretic effect of the salicylate of soda and theobromine is due to the excitant action of the drug on the renal epithelium. As the epithelium is the principal seat of lesion in chronic parenchymatous nephritis, it might be feared that diuretin would be injurious in Bright's disease. The observations of Koritschoner show that this fear is not well founded, and that diuretin excites the renal functions without irritating the kidneys. Thus, in two cases of acute scarlatinous nephritis, when Koritschoner gave diuretin in large doses, the patient recovered with astonishing rapidity and without any complications. Under the influence of the medicament, the blood-corpuscles and hyaline casts were seen from day to day to disappear from the urine. This same favorable action of diuretin on the nephritic processes has also been noted in chronic Bright's disease.

The new drug has not as yet—as far as we have been able to ascertain—been much introduced into this country, and as theobromine is very expensive, and as the cost of a drug is an important item in the economies of many physicians and their patients, it is doubtful whether many serious trials will be made with diuretin for some time to come.—*Boston Medical and Surgical Journal*, October 30, 1890.

THE TREATMENT OF INFLAMMATION OF THE EXTERNAL AUDITORY MEATUS.

In a paper published in the *Lancet* for November 1, 1890, Dr. J. Swift Walker takes exception to the use of the word "otorrhœa" in inflammation of the auditory meatus, since the disease only becomes "otorrhœa" when it has become chronic by perforation of the membrana tympani, and in consequence the different varieties of inflammatory affections in this locality are not sufficiently recognized, and therefore treatment becomes routine, and in many cases is inefficacious. The simplest form is inflammation from dentition and stomach-derangement in children, and these cases are almost invariably neglected, as the common impression is that the discharge will cease without remedial measures. The contrary, however, is the fact, as, according to Dr. Walker, if the affection be allowed to continue unattended, it is certain to destroy the tympanum or cause perforation. When treatment is used for such cases, carbolic acid is the one which is generally employed, and yet Dr. Walker maintains that there is nothing more irritating to the inflamed meatus and tympanum than this preparation, and that really no disinfection is required until there is perforation of the drum. In the simplest variety of inflammation of the meatus in children nothing is so effective as calomel purge, and a little belladonna and chloroform liniment, equal parts smeared over the mastoid region to relieve the pain, which is sometimes very distressing. If the disease goes on further, and there is a mucous purulent discharge, wipe out the discharge daily with a little piece of wool wrapped round an ear-probe; then paint the meatus with tannate of glycerin.

In exanthematous inflammation, after any of the zymotic diseases, as scarlatina, measles,

etc., we come to a very intractable form of the affection, which requires great care and attention with perseverance. The author then recommends as a lotion, alum iron, three drachms; sulphate of zinc, two drachms; water, to eight ounces. The ear is first to be thoroughly syringed with warm water, then dried thoroughly with cotton-wool, so as to wipe out all discharge and the lotion administered. In all such cases it is absolutely necessary that the Eustachian tube should be opened, and this can be accomplished by using a Politzer's bag or the catheter once a week. The syphilitic and tubercular otorrhœa must be treated upon the same principles, but with the addition of strict hygienic and constitutional treatment.

CEREBRAL CONTUSION.

At the recent meeting of the New York Medical Association, DR. CHARLES PHELPS read a paper on this phase of the subject (*Medical Record*, November 1, 1890). The brain contusion might take place at the seat of external injury, or on the opposite side, or somewhere between. Contusion by contre-coup had received little attention in medical literature since the publication of Holmes's "Surgery." That it was important and frequent he had been enabled to demonstrate by several post-mortem specimens, as well as by subjects. In one specimen the blow had caused complete separation at the temporal, sphenoidal, and parietal juncture on one side, yet on that side the brain showed no injury; while at a corresponding point on the opposite side was an extensive contusion.

There might be no external sign of injury where contusions of the brain existed, producing symptoms mistaken for alcoholism. He cited such a case. The mistake was commonly made by the police of regarding patients as under the influence of alcohol when suffering from cerebral contusion. The two conditions were likely also to coexist. In a case at St. Vincent's, in 1880, a man died eighteen days after injury to the occipital region; autopsy showed an abscess in the cerebrum some ways distant and interior. An early diagnosis in such cases was often obscure, if not impossible. There had been cases of severe contusion without concussion. He gave the following conclusions: 1, Cerebral contusion may be either direct or by contre-coup, and may be either limited, diffuse, or attended by hemorrhage upon the surface of the brain; 2, the superficial hemorrhagic form may cause early death by compression; 3, the limited or diffuse form may cause early death through consecutive general hyperæmia; 4, the symptoms then resemble those of alcoholic intoxication, for which it is usually mistaken; 5, the limited or diffuse forms may cause death at a later period by the formation of abscess; 6, contusion of the brain, with the possible exception of cranial fracture, is in general the most frequent cause of death in injuries of the head as a class.

THE TREATMENT OF PURULENT AND INFECTIOUS PLEURISIES BY INTRA-PLEURAL INJECTIONS.

At the meeting of the Société Médicale des Hôpitaux, held October 17, 1890, DR. FERNET presented a communication with the following conclusions (*La France Médicale*, October 24, 1890):

The treatment of purulent infectious pleurisy, according to the antiseptic method, by the procedure of puncture, followed by intra-pleural injections, is warranted by the fact that, as is the case with antiseptic thoracotomy, it fills the double indication of evacuating the transuded liquid, and of directly and locally combating the affection. The especial indications for this procedure are relative, on the one hand, to the seat and extent of the purulent collection, and, on the other, to the nature of the pleurisy.

Limited circumscribed pleurisies are always amenable to this treatment, which, further, is especially applicable to purulent pleurisies, whether of tubercular origin or due to the action of the pneumococci. It, however, seems less applicable, according to the author, to the treatment of pleurisies of streptococcic origin, and especially in the case of putrid or gangrenous pleurisies. The early performance of antiseptic pleurocotomy is, nevertheless, of great value in the treatment of the majority of cases of purulent pleurisy, and should always be relied upon when the employment of puncture and injection have been proved to be inefficacious.

There are two methods of employing intra-pleural antiseptic injections,—either the repeated injection of the liquid into the infected spot without evacuating the transuded liquid, or a preliminary evacuation of the transudation, and then washing out the cavity with an antiseptic. Both of these methods possess certain indications in certain definite cases. The first, according to the author, deserves consideration as a preventive or palliative to

combat the infectious character of pleurisy and to delay or prevent the development of infection or to prevent the affection from becoming purulent.

The second method is, however, a curative one, and it acts by destroying the infection and so producing a cure. Among the remedies which the author employs for washing out and injecting into the pleura, he especially uses either the soluble antiseptics,—such as corrosive sublimate, chloral, chloride of zinc,—or the insoluble antiseptics,—such as naphthol or creolin,—which, he says, are of especial advantage in injections which it is desired to lead into the pleural cavity.

THE TREATMENT OF BILIARY COLIC.

In the treatment of biliary colic the most important indication is to lead to the increase of the biliary secretion, so as to enable the removal of the obstruction and to force it onward into the intestine. The contraction of the bile-ducts and gall-bladder may perhaps act as auxiliaries in accomplishing this result, but the increase in the biliary secretion is the end to be aimed at.

In a paper published by PROFESSOR SÉE, in *La Médecine Moderne*, November 6, 1890, while emphasizing the importance of the early removal of the calculus, the author shows that, in the first place, it is necessary to lessen the suffering of the patient, and that the most reliance should be placed upon a hypodermic injection of morphine, in spite of the fact that morphine itself tends to reduce biliary secretion. Antipyrin exercises little influence on the biliary secretion, but it is of little value in relieving pain. Chloral, if employed at all, should be given in enemata, while chloroform is of undoubted value not only in relieving the pain but also by causing relaxation and dilatation of the bile-ducts, and so perhaps facilitating the removal of the calculus. It must be recognized, however, that the indications for the use of narcotics and anæsthetics is a secondary one, and that they should be only employed with the idea of relieving pain, and so perhaps causing a relaxation of the bile-ducts, while the most attention should be directed towards the increase of the biliary secretion.

Experiment has shown that the presence of any mechanical irritation in the bile-ducts serves to increase this secretion. Of the cholagogues, turpentine is one which has certain powers, but it is difficult to employ it in sufficient dose. Nevertheless, it is to this substance that Durand's remedy owes its efficacy. Salicylate of sodium has been recognized as a cholagogue by a number of eminent experimenters, and in watery solution markedly increases the biliary secretion, especially in the amount of water contained in it. This effect persists for some hours after the use of the remedy, and at the same time, in addition to its cholagogic action, also possesses certain values as an analgesic, and should, therefore, not be overlooked in the treatment of the painful stage of the attack. Dr. Sée speaks of the results, especially obtained by Rosenberg, as to the value of olive oil in the treatment of biliary colic, and maintains that, after the administration of olive oil, the biliary secretion is largely increased, and may so assist in mechanically removing the calculus. In addition to this effect, Dr. Sée calls attention to the fact, likewise claimed by Rosenberg, that olive oil, after its administration in large amounts, leads to the development of considerable quantities of fatty acids, which are themselves capable of dissolving cholesterin. In the condition of biliary lithiasis, cholesterin is precipitated, as a consequence of the insufficient quantity of saponified fats, such as the stearate and oleate of sodium. The olive-oil treatment, therefore, gives to the system the fatty matters which were before in insufficient amount, and it is this excess of fatty bodies, which is eliminated in the stools in the form of white masses, which were formerly mistaken for calculi. From a clinical point of view, however, apart from all theory, it seems to be fairly well established that olive oil exercises a considerable action on the biliary crisis itself, and may lead to the diminution or disappearance of the pain or of jaundice. All purgatives should be avoided that have in themselves any marked energy at all, since by increasing peristaltic action they tend to increase the activity of the bile-ducts and so aggravate the patient's condition; so, also, all substances should be avoided which tend to diminish the biliary secretion, and among them the author mentions salts of potassium, calomel, iron, copper, atropine, and strychnine.

SOME OBJECTIONS TO COCAINE IN GENITO-URINARY SURGERY.

Cocaine is of almost universal application in such operations as circumcision, urethrotomy, meatomy, and usually is used with com-

plete success as an anæsthetic. There are, however, some disadvantages following the use of the drug, and attention has been called to these objections in a paper by Dr. Bissell, published in the *Medical Record* for November 1, 1890.

Since cocaine has been in use it is not uncommon to find, after an internal urethrotomy, one or two pieces of mucous membrane clinging to the urethrotome. They are usually found in the angle between the dilating-bars and the short cross-bars.

In these operations the Otis urethrotome—an instrument which is very nearly perfect—is always used, and used with the utmost care. After the cutting, the bars are only closed sufficiently to admit of its withdrawal. In about one-quarter of all the cases there was found caught in the instrument one or more pieces of membrane. In some cases the portion torn out was of considerable size. In a recent operation it was over half an inch long and nearly a quarter of an inch at its widest point.

Where ether is used in the internal operation with perineal section this accident is not noticed. In order to be still more certain that the cocaine caused the trouble, Dr. Bissell made applications of cocaine to normal urethræ, and into urethræ with large calibre strictures, as if about to perform internal urethrotomy, waited the usual time for it to absorb, and then, through the endoscope, observed the condition of the urethral wall. There was a little more difficulty than was natural in entering the proper-sized tube. The mucous membrane was blue and congested, and pointed into the opening of the tube. In the pathological urethræ these appearances were most marked.

This narrowing of the canal and fulness of the mucous membrane would account for the frequency with which the latter is caught and torn away by the smallest closing of the bars of the instrument. Future stricture or permanent contraction of the penis will be a very natural result of this laceration. Hemorrhage after the operation is another disadvantage of cocaine. Bleeding during the first night is more likely to occur after cocaine anæsthesia than after ether or chloroform, as can be observed in cases of external section. This hemorrhage is not of much importance in hospitals, or where a competent nurse is in charge; but when the care of the patient is left, as it often has to be, to a lay friend, it may be a very serious matter.

In circumcision, cocaine rarely gives trouble during the operation. If the solution is injected too close to the line of the cut, the swelling it causes may obscure the edges and leave a ragged and irregular line of union.

The extravasation of blood, which is almost unavoidable where the cocaine is injected into the subcutaneous tissue, is objectionable. In some cases superficial sloughing of localized points may result from this extravasation and make the healing slow and troublesome.

A very serious objection to cocaine in circumcisions is in children or in very nervous patients. The sight of the instruments, the dressings, the pain of the hypodermic punctures, and feeling and hearing the cutting and sewing up of the wound will cause severe shock in a delicate and sensitive child, and may frighten him into hysterics or even convulsions.

Chloroform is so easily given, and so harmless in children under ten years, that it or ether ought to be used in preference. Idiosyncrasy may account for certain cases in which the drug, however skilfully applied, does not completely anæsthetize.

Other cases occur in which the tissues, owing to pathological changes, do not absorb the solution rapidly enough, or sufficiently, in the quantity it is safe to use, to cause complete freedom from pain.

Cocaine-poisoning is always possible, even with moderate quantities of the drug.

THE RÔLE OF THE PARASITE IN SKIN-DISEASE.

Mr. Dale James, in his presidential address to the Sheffield Medico-Chirurgical Society, took as his key-note the influence of bacteria in the production of diseases of the skin, and predicted that "the victories of the immediate future in the domain of dermatology will be gained through the recognition of the immense possibilities of bacillary infection." This is, doubtless, true to a very large extent, and we have only to look back a few years—before, in fact, Pasteur, Lister, and Koch had given us the result of their labors—to find that the only diseases of parasitic origin were, on the vegetable side, those due to the hyphomycetes producing favus, the various forms of tinea tricophytina, tinea imbricata, and tinea versicolor, and perhaps the fungus-foot of India; while, on the animal side, were the acarus scabiei, the chigre, guinea-worm, filaria sanguinis hominis, and the harmless demodex folliculorum, to which

are to be added the different kinds of lice and a few other accidental ectozoa. To the animal group we have added very little until the last year or so, in which Darier's researches render it probable that the coincidial forms of life called psorosperms play an important part in the production of some diseases, such as Paget's disease and the rare affection called Darier's "psorospermose folliculaire vegetante;" while other observers have thought that these organisms are present in rodent ulcer and molluscum contagiosum. What the exact interpretation is of the presence of these low forms of animal life remains to be proved, but it may be that a new and very important chapter of pathology, not only of the skin, but of many internal organs, is about to be opened up. All this, however, is as nothing compared with the etiologically and practically important part played by bacteria and micrococci in disease of the skin. At present we are bewildered by their numerous varieties and ubiquity, but what we already know and what we may fairly conjecture about their influence afford bright promise for the future.

The diseases acknowledged to be bacillary are leprosy and rhinoscleroma with their special bacilli; also the group due to the tubercle bacillus, lupus, struma, tubercular ulcers, and, according to Riehl and Paltauf, verruca necrogenica. When we turn to the diseases due to pus-cocci—chiefly staphylococcus aureus and albus—we have impetigo contagiosa, boils, carbuncles, the impetiginous form of eczema, and, as a result of mixed infection, kerion of head and beard, and acne pustules; while probably ordinary sycosis is also the result of similar or identical cocci. Some cases of purpura have already been proved by Russell and Cheyne to be due to bacterial emboli, and Koch believes in a still further extension of their influence in the production of purpuric extravasations. Among diseases which, on clinical and therapeutic grounds, are also probably due to bacilli or cocci, though actual proof is still wanting, are seborrhœa, capitis and corporis, the grouped comedones of children, and perhaps the more common form in adults, pityriasis rosea, common warts, the multiple gangrenous dermatitis of infants, and such tropical diseases as yaws, verruga Peruana, and Oriental boil, unless these last are to fall under the domain of the new rivals, the psorosperms.

An extremely important development of the theory, if true, is the one which Unna, in opening the debate on "Eczema" at the late British Medical meeting at Birmingham, put forward, on what he considers sound *a priori* grounds,—viz., that the multiform dermatitis which we include under the term of "eczema" is entirely of parasitic origin, though he does not pretend to have found any particular organism to which the inflammation may be due. All the factors which most dermatologists are wont to regard as etiological—such as gout, rheumatism, digestive derangements, and nervous exhaustion—are for him merely conditions which perhaps render the soil more suitable for the development of the germ. This, however, is a large claim, which few dermatologists will accept either as probable or in accordance with all the clinical facts, and might be put forward on almost similar grounds for nearly every form of dermatitis. That micro-organisms exist in large numbers on the normal skin has been proved by Uffreduzzi and others, but they are innocuous to sound skin even in the people who are most sparing in their ablutions. That micro-organisms exist in great variety and number in scales, crusts, and other inflammatory products, and that some of them at least exercise an injurious influence, we know to be the case,—with pus-cocci, for instance,—and it is probable that they are responsible for many secondary consequences of inflammation of the skin, and also possibly for keeping up an inflammation that would otherwise subside. To assume that they come in before dermatitis has opened the door, so to speak, and that they should often excite a very widespread inflammation in a few hours, with a symmetrical distribution in definite vascular area and occasionally even along the course of a nerve, appears to us to be mistaking effect for cause, and calculated to hinder rather than promote the advance of the pathology of the skin. The theory of secondary infection by micro-organisms of inflamed surfaces seems to be more in accord with clinical facts and to be capable of yielding important practical indications for antiseptic treatment, while it does not discourage intelligent efforts by the physician to render the patient's organism less prone to inflammatory changes on slight provocation, whether that inflammation be in internal organs, mucous membranes, or skin. Highly important as the germ theory is, it will be a retrograde step in pathology and therapeutics if, ignoring the rich vascular and nervous connections of the skin, we treat it as if it were independent of all it encloses, and simply sterilize it

instead of trying also to act upon it by intelligent treatment of the rest of the organism, as we do in diseases of other parts of the body.—*Lancet*, October 25, 1890.

Reviews.

MANUAL OF CHEMISTRY. By R. A. Witthaus, A.M., M.D., Professor of Chemistry and Physics in the University of the City of New York; Professor of Chemistry and Toxicology in the University of Vermont, etc. Third edition.
New York: Wm. Wood & Co., 1890.

"Witthaus's Chemistry," which, within seven years, has reached three editions, is essentially a chemical text-book for the use of medical students, and admirably fulfils its purpose. The descriptions of processes of manufacture with which so many text-books are overloaded are brief, while the chemistry of hygiene, therapeutics, and toxicology occupy especially prominent positions.

The work is divided into three parts. In the first the principles of chemical science are treated of, as well as so much of chemical physics as is absolutely requisite to a proper understanding of that which follows. The second part treats of special chemistry, and shows a departure from the usual methods followed in chemical text-books in that the elements are classed not as metals and metalloids, but into classes and groups, according to their chemical character. Such a method evidently possesses great advantages over the mode of classification proposed by Berzelius of metals and metalloids, for several elements formerly classed among the metals resemble the so-called metalloids in their chemical characters much more closely than they do any of the metals; and it is evident that a classification based, as under the system of Berzelius, upon physical properties, which in many cases are ill-defined and variable, is unsatisfactory. The method of classification adopted by Professor Witthaus is based upon the chemical properties of the oxides and upon the valence of the elements, forming a division of four great classes, according to the nature of the oxides and the existence or non-existence of oxysalts. In the first class, which he terms the "typical elements," he places hydrogen and oxygen, for the reason that, although they differ from each other in many of their properties, they both play an important part in the formation of acids, and neither could find a suitable place in either of the other classes.

The second class includes all the so-called metalloids, except hydrogen and oxygen, and the author defines them as those elements whose oxides unite with water to form acids, but never to form bases, and which do not form oxysalts.

The third class contains those elements whose oxides unite with water, some to form bases, others to form acids, and which form oxysalts.

The fourth class comprises those elements whose oxides unite with water to form bases, but never to form acids, and which form oxysalts.

A novelty in the third edition of Dr. Witthaus's text-book, and one which will strike most readers as a decided innovation, is in the orthography of certain words, such as chlorine, chlorides, etc., which has been modified in accordance with the views expressed in the report of the Committee of the Chemical Section of the American Association for the Advancement of Science, presented at the Toronto meeting in 1889. Thus, all chemical compounds which now end in *in* and *ine*, according to the new method of spelling terminate only in *in*. Thus chlorine is chlorin, pronounced chlō'rĭn; iodine, ī'ōdĭn; morphine, mōr'phĭn; the reason given being that this pronunciation distinguishes clearly between *id* and *ite*, so aiming at avoiding the confusion which often arises between chloride and chlorite, sulphite and sulphide, etc. Further, the final *e* is dropped in all cases, thus departing from the system suggested originally by Watts of indicating alkaloids and other basic substances by the terminal *ine* and all others or neutral substances by *in*. While the system thus outlined undoubtedly has many advantages, its adoption seems as yet rather untimely in view of the fact that the U. S. Pharmacopœia designates alkaloids and other bases by the final *e*, glucosides and other substances by its absence.

BACTERIOLOGICAL TECHNOLOGY. By C. J. Salomonsen. Authorized translation from the second revised Danish edition by William Trelease.
New York: William Wood & Co., 1890.

While many works on bacteriology are accessible to the reader familiar with German, yet a short and clear succinct statement of bacteriological investigation in English is highly desirable, and the scope of the volume before us is such as to satisfactorily fill this vacancy. Dr. Salomonsen's work is well adapted to those who, without the assistance of an instructor, desire to carry out studies

in bacteriology, and, although it does not attempt to give a presentation of the entire technology of the subject, it describes the simplest and most easily managed methods, so that, with a very moderate outlay, a laboratory may be fitted up which will answer all general purposes for those who do not wish to go too deeply into the subject. The work is illustrated with seventy-two figures, principally of the various forms of apparatus required. Its usefulness would be greatly extended by plates, showing the characteristics of the different bacteria and micro-organisms.

ARBEITEN DES PHARMAKOLOGISCHEN INSTITUTES ZU DORPAT. Herausgeben von Dr. R. Kobert, Kaiserlich Russischem Staatsrath. Bd. v. Stuttgart. Verlag von Ferdinand Enke, 1890.

STUDIES FROM THE PHARMACOLOGICAL INSTITUTE OF DORPAT. Published by Professor R. Kobert.

Vol. V. of Professor Kobert's contributions to pharmacological literature sustains the reputation earned by the scientific character of his earlier publications. The volume before us contains three elaborate studies,—the first, on the "Action of Uranium," by Jacob Woroschilsky; the second, on the "Action of Tungsten," by Jacob Bernstein-Kohan; and the third, on the "Action of Urechites Suberecta," by Michael Minkiewicz. The latter was contributed to the original columns of the GAZETTE, and was published in the THERAPEUTIC GAZETTE for August, 1888.

The article on uranium is confirmatory of the results obtained by Professor R. H. Chittenden, and published in the GAZETTE for October 15, 1888, p. 698. The author has shown that uranium is one of the most poisonous of metals, even in doses no larger than $\frac{1}{800}$ of a grain for every two pounds of body-weight; and that the oxide is a most intense poison, and in this dose readily produces death. When given in the form of the nitrate or the acetate, by the mouth, it produces gastro-enteritis; and in doses of $\frac{1}{64}$ of a grain for every two pounds of body-weight produces violent hemorrhagic nephritis, various forms of paralysis likewise preceding the fatal issue. Uranium appears to differ from all other metals in that, in addition to the hemorrhages in the intestinal mucous membrane and in the kidneys, numerous ecchymoses are likewise produced in the peritoneum, endocardium, heart-muscle, and even in the liver, so that the conclusion appears warrantable that uranium produces direct modifications in the walls of the blood-vessels. Experiments made with the arterial circulation through various organs showed that uranium produces marked vascular dilatation, while, further, the reduction of oxyhæmoglobin is largely prevented. In fact, the author attributes the great vascular dilatation which follows the administration of uranium as analogous to the production of the same state of affairs by highly venous blood; so also the irreducible oxyhæmoglobin may be looked to as the cause of the intense disturbance of nutrition which follows the administration of uranium. For, since the oxygen is incapable of leaving hæmoglobin in its normal manner, disturbance of nutrition must result, and in this manner emaciation in cases of chronic poisoning is to be explained, as already pointed out by Chittenden. The author likewise confirms the presence of glycosuria as a constant symptom in uranium-poisoning, for as long as uranium is circulating in the blood internal respiration is interfered with. Thus oxidation of sugar is prevented, and the latter, therefore, appears unchanged in the urine. When, however, uranium is removed from the blood, then the oxidation in the tissues normally occurs and the glycosuria disappears. The author, as the result of the facts which have accumulated as to the properties of uranium, recommends the inclusion of uranium in the list of the most violent poisons.

Dr. Bernstein-Kohan's paper, on the "Action of Tungsten," includes the complete historical study of the chemistry and toxicology of this metal, with a number of original experiments made upon cold-blooded and warm-blooded animals, with elaborate estimations as to the mode of excretion of tungsten and its deposit in the different tissues and organs of the body. He finds that, even after subcutaneous injection, at least forty per cent. of the tungsten given is eliminated from the intestine and appears in the fæces; while in animals in whom vomiting is possible considerable quantities of tungsten are to be found in the ejecta. While the greater part of the tungsten injected, which escapes elimination, is to be found circulating in the blood, considerable percentages are also deposited in the liver, kidneys, bones, and muscles, while at least ten per cent. is found in the intestines. An astonishing fact detected by the author was that, while the intestinal mucous membrane is the most active in the elimination of tungsten, its absorption from the intestinal canal may almost be said to be imperceptible. Consequently, tungsten may be placed among the slightly poisonous

metals, provided the mucous membrane of the alimentary tract be uninjured, since absorption through this system is practically impossible; and although in its chemical characteristics tungsten is closely associated with uranium, the poisonous dose of the former is nearly one hundred times larger than the latter. Chromium also is closely allied with uranium and tungsten, but of this group uranium is the only one which has been found to produce diabetes. The symptoms of poisoning by tungsten agree in general respects with those of the other heavy metals,—loss of appetite, nausea, vomiting,—which may become so violent as to produce severe gastric hemorrhage, diarrhœa, and, in advanced cases, convulsions, paralysis, and finally death. The most marked symptoms detectable post mortem are found in the alimentary canal and kidneys in the form of extensive vascular ruptures.

SAUNDERS'S QUESTION COMPENDS, No. 12. ESSENTIALS OF MINOR SURGERY AND BANDAGING, WITH AN APPENDIX ON VENEREAL DISEASES. By Edward Martin, A.M., M.D.
Philadelphia, 1890.

We suppose that there must be a demand for such books as the above, or writers would not write them and publishers would not publish them. The objection to this class of books is that they are abused; the student neglects his text-books, and is satisfied with the very scant knowledge he obtains from a compendium, by which he has lost the opportunity of laying a good and solid foundation upon which to build his future medical education. Although there is an objection to this kind of medical literature, yet it fills a certain purpose, and, if not wrongly applied, there is something good to be said for it. Diplomas are to be obtained, and, in order to obtain them, students must pass examinations. Therefore, to assist at the time of these examinations, such books as Dr. Martin has written, and written well, fill a want that all overworked students can well appreciate.

To now consider the little book that Dr. Martin has written for the purpose of assisting the student "to formulate his knowledge upon subjects usually treated as of minor importance in his surgical course," it may be said he has given a very practical and systematic study of the subject, showing very evidently his familiarity with the needs of students, and we have no doubt they will be much aided during their college course by a frequent reference to its pages. While we may speak well of that which relates to the surgical part of the book, on the other hand we cannot endorse all which the writer says in his appendix, and its omission would not have lessened the value of the work. An undoubted typographical error has been overlooked on page 131, where it is advised to give "hypodermically a quarter of a grain of morphia together with a sixth of a grain of atropia." One-sixtieth of a grain of atropin is evidently intended.

J. H. C. S.

TERMINOLOGIA MEDICA POLYGLOTTA. A CONCISE INTERNATIONAL DICTIONARY OF MEDICAL TERMS. Compiled by Theodore Maxwell, M.D., Camb., B.Sc., Lond., F.R.C.S., Edin. With the assistance of several collaborators.
London: J. & A. Churchill.
Philadelphia: P. Blakiston, Son & Co., 1890.

The object of this work is to assist medical men of various nationalities to read the literature of other countries. French has been selected as the key language, and consequently French terms are usually translated into Latin, English, German, Italian, Spanish, and Russian, so that a reader of any of these nationalities can find a translation of the French term in his own language by a single reference. For the Latin, English, German, Italian, and Spanish terms, or French and English, a further reference to the French translation will first be necessary in order that a reader who is of some nationality other than French may obtain the meaning of the term he requires. All the words are placed in a single alphabetical arrangement, and in this way repetition is largely avoided; so also adjectives and verbal modifications of sentences, as well as many compound terms, are likewise omitted, since the meaning of these words may readily be found by reference to each of their component terms, and the work, containing only some twenty-five thousand words, is thus practically as useful to the reader as though it had contained three or four times the number differently arranged.

Correspondence.

BERLIN.

(From an occasional Correspondent.)

According to all appearances we stand on the eve of a grand medical event. A few weeks yet and the greatest foe, the most merciless destroyer of the human race,—tuberculosis,—will be under the control of science,

through the unrivalled genius and tireless work of Professor Robert Koch. For the benefit of the subscribers of the THERAPEUTIC GAZETTE, I have taken pains to ascertain all steps thus far undertaken by Professor Koch, and can consequently give you a correct view of the present status of the matter. Shortly after the close of the Medical Congress, Professor Koch had a long interview with the Secretary of Education, Von Gossler, who, in his turn, conferred with the emperor. As the result of these interviews, Koch was temporarily relieved from all duties attaching to the professorship of hygiene and bacteriology, Dr. Ervin von Esmarch, Koch's assistant, being appointed in his place. The plan, as laid out by Koch and the government, was that the former should devote his time exclusively to the experiments relating to the cure of consumption. Absolute secrecy, besides, was to be observed. Koch communicated his secret to the secretary, to the emperor, and to a single medical man,—viz., Dr. Pfühl, military surgeon of the Charité, his own son-in-law. The experiments were conducted in the ward of Professor Senator by Professor Koch, Dr. Pfühl, and his assistant, Dr. Libbertz. The experiments proved so highly successful that the plan of erecting a large hospital for consumptives in Berlin, about to be executed, was dropped at the inducement of Professor Leyden. Leyden himself emphasized in a lecture the brilliant results achieved by Koch and Pfühl. Everything went on smoothly until it was found that, in spite of the great precautions observed, outsiders obtained information of Koch's method. A nurse was discharged, and the experiments were abruptly stopped. It is rumored here in town that an American professor offered the nurse a fortune for the communication of Koch's *modus operandi*. Koch experiments at present *incognito* in a lying-in dispensary on the outskirts of Berlin, where none, not even the attending nurse, knows him. Meanwhile, the government has placed a large sum of money at Koch's disposal, and has decided to erect a special "Koch Institute," on the plan of the "Institute Pasteur," where consumptives will be cured on the new plan, and, besides, courses of instruction will be given to foreign physicians. Already twelve American physicians and students, residing in Germany, have filed their applications for admission, fearing that the crowd of attendants will be enormous. Still, it will be many months yet before the new institute will begin work.

Last week Professor Gerhardt visited Professor Koch, and asked him to treat a patient of his, a lady of very high rank and title, on the new plan. Koch refused point blank, and it took all of Gerhardt's influence and incessant prayers to finally induce Koch to consent. The lady in question was a typical consumptive, though her affection had not yet progressed very far. Koch made the lady swear not to divulge the secret to any one.

I am fortunate enough to be in a position to let you know some of Koch's new treatment. No medicine nor chemicals of any kind enter into the treatment, except a single metal. The chief factor is an "*antitubercular lymph*," prepared by an exceedingly complicated process from animals rendered tubercular for the purpose in question. The antitubercular lymph is injected deeply into the cellular tissues and muscles of the back and the neck. The medicine mentioned above, very likely corrosive sublimate, is not used by itself, but is combined in a certain manner with the antitubercular lymph. As a result of the injections the tubercular process is not only stopped and the existing tubercular foci healed, but the system is also rendered at the same time immure against any other tubercular processes.

What shall we say to it? Remain incredulous? Is it not Koch, the most famous of medical men living, the Napoleon of the healing art? Yes; but Napoleon, too, failed ignominiously when he, intoxicated by the glory and honor won, undertook to enslave all Europe. Again, it is not likely that a man like Koch will stake his reputation on a humbug like Dr. Ferran, the self-lauded conqueror of the cholera.

Yesterday a deputation of Belgian physicians arrived at Berlin to learn and introduce at home Koch's treatment. It is a little too early yet for that. Still, at present, there are no happier people in Germany than the consumptives. They are being congratulated from all sides, and it almost seems as though many growl for not being tubercular subjects. Professor Koch receives daily bagfuls of letters from Germany and other parts of Europe asking him to send in his treatment. Some letters contain fees ranging from a quarter to five dollars. The day before yesterday Professor Nothnagel, of Vienna, delivered a lecture on the subject, in which he declared that there was no doubt that consumption will be shortly a curable disease, and that Professor Koch will rank as the greatest benefactor of mankind. The lecture was listened to with solemn attention.

It is interesting to note that the fight against tuberculosis is taken up with great vigor in

other quarters too. Professor Schroetter, of Vienna, just sent out a notice stating that he has obtained miraculous results in the treatment of consumption with hydrocyanic acid, and that in the next meeting of the Wiener Aerztliche Verein he will read a paper on the subject. It seems, again, that the laurels of Miltiades disturbed the sleep of Themistocles.

Next to the cure of consumption, the subject of "suggestion" occupies the chief interest of the German profession. Some really extraordinary cures through suggestion have of late been reported, which, if it were not for the highly reputable physicians connected with it, might be regarded as fakes. The latest achievement in the line of hypnotism is that of Dr. Ryvalkin, who, in the presence of a number of physicians of standing, has proven that he can produce intense vesication of the skin by suggestion. The subject, a robust young man of 16, painter by trade, was hypnotized, and told that he felt very cold, and that he should place his right arm to a stove to get warm. He was also told that it was necessary to produce a blister on that arm. The suggestion was repeated three times, whereupon the subject was awakened. The young man executed all suggestions faithfully, placed his right arm to the *cold* stove, and instantly uttered a cry of pain and anguish, as if the arm had been in reality injured. Investigation of the arm revealed severe vesication, a large zone of rubefaction. The young man had, besides, such intense pain that he was unable to sleep. Next morning a papular erythema set in, which was exceedingly painful, and in a few hours two blisters of the size of a hazelnut appeared, which opened later spontaneously. It must be added that the subject in question was affected with typical hysteria. This process exceeds clearly the line of things which, to an ordinary mind, appear comprehensive and possible. Even an attempt at explanation would here be absolutely useless. It is little, if at all, short of a miracle.

There is, no doubt, that the influenza has returned; hundreds, as yet, only have been attacked, and your correspondent among the first. In my case I can state as a peculiarity that the disease commenced, just as it did last year, with a *pâté de foie gras* I indulged in, and the upset stomach following. It is, consequently, likely that the United States, too, will be revisited. *Ergo cave anserem!*

In spite of the failure of somnal, and the severe criticism Professor Liebreich subjected its inventor, Dr. Radlauer, proprietor of the Kronen Apotheke at Berlin, to, that chemist cannot refrain from inventing other panaceas. His latest is "antinervine." You would think from this name that Dr. Radlauer's remedy is destined to do the opposite work from a nervine,—*i.e.*, to attack and injure the nervous system. On the contrary, Radlauer's antinervine is claimed to strengthen and build up the nerves. The drug is a white powder, of an acidulous but agreeable taste, easily soluble in warm water, alcohol, and ether. It is really a mere combination of bromide of acetanilide and salicylanilide. Radlauer claims that the new remedy unites all the advantages of bromine, salicylic acid, and antifebrin, without, of course, having any unpleasant features. The dose for adults is from 7 to 15 grains; for children, 4 grains. Antinervine is said to reduce the temperature 2° C., the apyresis lasting from five to seven hours. The indications for the remedy are typhoid fever, tuberculosis, diphtheria, and pneumonia. One advantage the drug clearly possesses, and that is its cheapness, being one hundred and fifty per cent. cheaper than antipyrin. Radlauer sells fifteen compressed tablets of antinervine (seven and a half grains each) for twenty cents.

Another remedy recently put in the market is cephalalgine, a specific against headache. The name is equally perverse, as it clearly signifies a producer of headache; it ought, at least, to be named anticephalalgine.

Visiting the Charité yesterday, hunting for rare cases for the benefit of the THERAPEUTIC GAZETTE, I was shown a man who had just been admitted, with the diagnosis, "Swallowed dollar." The man had made a bet in a saloon that he could make a 3-mark piece, which any one might hand him, disappear in a second, so that no one could find it. A soldier handed him the coin, which the modern Bellachini promptly swallowed. But the soldier took a different view of the affair. Believing that the man meant merely to get away with the dollar, he had him arrested. The police lieutenant at the station-house, however, concluded it was a case for the Charité rather than for the lock-up. The potato-cure was being tried on the man; with what success I cannot say.

Another rare case is a man on whom the operation of cataract had just been skilfully performed. But there is nothing strange in that, you will say. Truly. But the man had no cataract, I will tell you. Even that is not so strange. Did not Nussbaum amputate the wrong leg, as he admitted in his "Surgical Failures"? The strange thing in the case in question is, that the operator was not Schweigger, Hirschberg, or Graefe, but a goat. The

animal, being teased by the man, revenged himself, removing the man's lens in the most approved of fashions. What a pity the man had no cataract!

As I am describing rarities, I might just as well mention one examined recently by Professor Virchow. It is a man with a beard of an unheard-of size. The beard of the man—Joseph Buellesbach, of Nonnenburg-on-the-Rhine—measures one hundred and forty-seven centimetres from the chin to its end. It is notable, as Professor Virchow explained, that all hairs are split up at the end. This disproves the view, thus far generally held, that the splitting up of hair favors its falling out.

The list of medical students attending German universities during the last session has just been issued. It might interest you to learn some of its data. Berlin one might suppose to have the largest number of medical students. It is a great surprise to find that the German metropolis occupies but the third rank in this respect, being outranked by Leipsic and Munich. The figures are as follows: Medical students,—Leipsic, 1594; Munich, 1382; Berlin, 1184. Next to Berlin, follows Wuerzburg, with 997, and Dorpat, with 944 medical students. The instruction in the University of Dorpat will henceforth be given in the Russian language, consequently Dorpat ceases to be a German college.

The Berlin physicians, at least the Chauvinists among them, having, as a result of the Medical Congress, stopped fighting the "Philadelphia doctor," have put on the war-paint against the "German doctor," for a change. A Berlin medical society has petitioned the government to put a stop to the present disgraceful state of affairs, whereby medical candidates, often long before having passed their final examinations, can acquire the title of doctor of medicine. The petitioners ask that this title be conferred only after the passage of the examination of state. I think it would be better to adopt the American plan, whereby the graduation as M.D. and the granting of the license to practise are made simultaneous. The present examination and promotion as doctor in German is a farce, and one of the most ludicrous kind. The candidate is compelled to write a thesis in Latin (quite recently German, too, has been allowed), and to defend the same in Latin *coram publico*, and before at least two opponents. I will not speak of the horrible Latin often used by the disciples of Æsculapius, nor of their frequently exposed inability to express themselves at all in that idiom. I will merely show you how the defending and opposing is done. The candidate goes to two friends of his and hands them a list of opposing remarks to be made by them, and also the answers he will give them. This is done invariably, and the *rector magnificus*, attired with his purple cloak and the insignia of his exalted office, invariably testifies that, as a result of the extraordinary skill and profound knowledge displayed by the candidate in refuting his antagonists and asserting the truth of his thesis, the title of doctor of medicine should be conferred upon him.

BERLIN, November 8, 1890.

BERLIN.

(From our Special Correspondent.)

Just at present R. Koch, in connection with his discovery in reference to tuberculosis, occupies the most prominent position not only in medical circles, but also in the whole thinking and non-thinking world. This is the more easily appreciated, as just now this disease finds its victims in every strata of society, and in such large numbers,—for it is well known that one-seventh of the human race die with consumption,—that for long years it has been wondered how this enemy to mankind is to be combated. Secrecy is still maintained in regard to the experiments; and this fact renders even more numerous the various reports on the subject that are circulated by those for and against. By the time of my next letter, in all these matters the veil will be removed, the result be made public, and there will then, indeed, be another International Medical Congress in Berlin, which, with one accord, will be busy learning the new doctrine. The discovery promises to be of great importance not only to medical, but also to social circles, for it may be truly said that no small part of the social problem at the present time is answered by our views in regard to the curability of phthisis. As we advance in knowledge of the causes of the different infectious diseases, other ones will, perhaps, be victoriously overcome; and, at all events, efforts in this direction should be maintained. Many articles, in our daily papers, of persons who pretend to be well-versed in these matters show, at first glance, an inefficient knowledge of the labors of their distinguished coworkers interested in this subject. Especially does the external world, as numerous writings of patients and doctors at our colleges here prove, seem to be prosecuting the work of Koch with feverish haste. But it must here simply be said that all of them will have to

wait until Koch has spoken. The question of the erection of large consumption hospitals for destitute patients—as was agitated by Leyden some time since in reference to hospitals for general diseases—is now being discussed on a broader basis. It is to be hoped that this plan will, after its revival, be adopted by its promulgators, since such patients can be best treated in specialty hospitals, as has been already proved in other countries. Berlin has, up to this time, but few hospitals devoted to special branches of medicine, except the large clinical institutions for patients affected with general or surgical diseases, as well as other establishments devoted exclusively to the treatment of gynæcology, obstetrics, ophthalmology, and otology. There is at the present time no large free hospital for nervous diseases, but small private ones are numerous. Moreover, there are no special hospitals for throat- or bladder-diseases. Judging by appearances, this department of Berlin's sanitary arrangements, which are, in other respects, well regulated, will shortly be subjected to a complete transformation. A new method is suggested in reference to the subject of the adoption of preventive means, or the employment of medical help in sudden accidents. This method is not yet ready to be announced. Still, we may state, that efforts are being made to keep up, both day and night, a connection between the different central stations and all places where human life is in danger from accident, so that the latter can be reached as quickly as possible by medical and surgical assistance, as well as by means of transportation. At present, during the day, when the crowd is greatest in the streets, as well as when the work is most busy in the shops and manufactories, the maintenance of such establishments and institutions is most important; as, for example, between ten o'clock in the morning and two in the afternoon, scarcely any doctors are to be found at their homes, being at that time engaged making calls.

Dr. Edmund Falk has recently presented to the Berlin Medical Society a very fine article on intrauterine medical treatment. The diseases of the endometrium are very important, on account of the greatness of their number, and yet the local treatment of the uterus is neglected by most doctors. In complaints in regard to the sexual system in women—*e.g.*, in menorrhagia—vaginal washes or applications are commonly prescribed. General intrauterine treatment is confined to the specialist. Still, it is necessary that every physician should know how to treat such tedious and important diseases as those of the endometrium, since this matter is of vital importance to the happiness of married life, to that of the family circle, and, indirectly, to that of the state. For this an easily applicable method of treatment is desirable. Liquid injections into the cavity of the uterus have—so we read—been followed at times by peritonitis and even by death. Moreover, they are not rendered free from danger by a previous dilatation of the cervix, and are also difficult in their methods of being applied. If a dilatation of the cervical canal be desirable, it is best accomplished by the use of tampons of iodoform gauze. The local use of other medicines in the liquid form is to be resorted to, their introduction into the uterus being accomplished by a goose-feather, or, if not sufficiently adhesive for this, by means of raw cotton, with suitable applicators. But with women who have not borne children a previous artificial dilatation of the cervical canal is necessary, and the treatment, chiefly used in endometritis cervicis, is most applicable here, because, higher up, the remedies applied are so influenced by the secretions that they can exert no real effect upon the mucous membrane. Another method of making application within the uterus is that by means of tents and salves; and for these reasons we must have a clear idea of the capacity for absorption possessed by the mucous membrane of the genital track. As a rule, we know nothing of the power of absorption in the virgin uterus. Falk introduced into the uterus tents medicated with corrosive sublimate, tannin, and lithium chloride, protected the vagina against the outflowing substance, and, after a given time, having syringed out the vagina, emptied the bladder with a catheter. Thus, in order to be sure of absorption by the vagina, the uterus was examined when completely isolated. Fifty minutes after the introduction within it of tents medicated with the iodide of potassium, the presence of the iodine could be proved in the urine. The power of absorption possessed by the mucous membrane of the vagina was much more slow; and, indeed, the tincture of iodine and glycerin, as is generally used on vaginal tampons, was absorbed still more slowly than a salve containing an equal percentage of the iodide of potassium. The mucous membrane of the normal labia seems so perfect as not to possess any capacity for absorption. Now, since the mucous membrane of the uterine cavity is readily absorbent, many remedies introduced into it will be able to exert a general effect; and it is, therefore, highly important that these various drugs affect the system at large only in such a manner as will be without injury to the patient.

The subject of the treatment of the uterine cavity with tents is one of wide range, as those made with cacao-butter, which is soluble, may be readily absorbed, while the ones made with gelatin form a few days after their introduction a tenacious mass, which does not dissolve in water at 60° (within half an hour), and can, for this reason, act in the uterus only as a foreign irritant. Landau adopted the use of grooved sounds, as were used by Caspar in the treatment of chronic gonorrhœa in the male urethra, and by means of these grooves the medication was introduced with cacao-butter, as the menstruum. Falk tried the antrophors or applicators introduced by Stephan, of Dresden. These were thin, spiral pieces of metal, which were covered with the medication in an easily soluble coating of glycerin. These curls of metal, in order to be less easily liable to be bent, were made of highly-tempered wire as a basis, by which means they might adapt themselves to every desirable shape, and thus fit into every wrinkle of the uterine mucous membrane. The metallic wire is not heated very hot, so that it retains its elasticity, and cannot inflict any injuries. The spiral wire itself, in order that it may not cause any abrasions after the melting of the medication, is protected by an insoluble gelatin covering, over which the more easily soluble gelatin menstruum, containing the medicament, is applied. The gelatin is sterilized by being previously heated to 100°. In from three to ten minutes it dissolves in the cavity of the uterus, and the remedy is thus brought in immediate contact with the mucous membrane of that body. After previously disinfecting the parts with a solution of carbolic acid (by means of a forceps or tenthholder), the application of this remedy is very easily accomplished by passing it through the orifice, and that, too, without either dilating the cervix or cutting the anterior lip. After this the woman lies down ten minutes. Then the spiral wire is removed by means of a thread, fastened in the handle of the applicator, and the patient can immediately go about her business. In this manner many drugs that were previously confined within a narrow sphere are now finding a broader field of usefulness.

Verf has thus made experiments with numerous kinds of drugs, and found that, in diseases of the endometrium, the viscid secretion becomes thinner, its color changes; finally, it gets colorless, and decreases in quantity; erosions caused by its passage heal up, and the mucous membrane becomes normal again. In fungus endometritis the use of these antrophors are of special value. They are covered with a one per cent. dilution of the chloride of zinc, or later with a three-tenths to a one per cent. cuprum sulphuricum, with a ten per cent. of resorcin, and with a five to ten per cent. dilution of tannin. Gonorrhœal endometritis was treated by means of antrophors, using a two per cent. dilution of creosote, and with it one-tenth per cent. of the bichloride of mercury, then with a mixture containing one per cent. of the chloride of zinc and one-tenth per cent. corrosive sublimate. The chloride of zinc penetrates directly into the mucous membrane, and makes it possible for the bichloride of mercury to get into those depths where the gonococcus dwells. Among the list of consequences, Falk mentions hemorrhage, especially after certain remedies, and also uterine colic, which latter is to be completely avoided by the addition to the remedy of cocaine. Finally, in perfectly isolated cases, after the use of applications of too great strength, there was caused inflammation of the surrounding viscera, so that, even by this method of treatment, not all the dangers of intrauterine disease have been overcome.

BERLIN, November 13, 1890.

POSTSCRIPT.—The hope of learning more about Koch's discoveries, which are so full of promise to the human race, is being gratified sooner than was expected. The publication of the work appeared the day after my mailing the above article, in an extra edition of the *Deutsche Medicinische Wochenschrift.* Nearly all the journals have copied the paper verbatim; the windows of most of the bookstores are crowded with dozens of copies of the above-named magazine. When this letter is published most readers of the GAZETTE will already have received interesting information on this important subject. Nevertheless, I shall very briefly give a *résumé* of its contents.

The remedy itself and its mode of being prepared will be published later, as the researches on the subject have not yet been completed. It is a brownish liquid, which should be as freshly prepared as possible, and is to be administered by hypodermic injections. A man is much more susceptible to its influence than a guinea-pig. The latter bears well a hypodermic injection of 1 to 2 cubic centimetres of the undiluted remedy, while .25 cubic centimetre will exert a very great effect upon a man. Three hours after the injection of the remedy there was a feeling of languor and dyspnœa, together with rigors, vomiting, and a rise in temperature to 39° C. In twelve hours there was an intermission of these symptoms, the weakness continuing for several days longer. The small-

est dose to affect a man is .01 cubic centimetre. *The remedy exerts a specific effect on tuberculous disease of every variety.* In tuberculous patients an injection of .01 cubic centimetre will produce a severe reaction. It is followed by a fever, attended with rigors, together with pains in the limbs, faintness, vomiting, and some coughing. In several cases there were noticed a slight icteroid discoloration, and on others an eruption like that of measles was observed on the chest and neck. When we have abundant proof of a fact our opinions are most easily influenced in its favor. The effect of this remedy is most easily studied in lupus, because in that disease it is most visible to the eye. A few hours after the so-called peripheral injections there appear a swelling and reddening of the lupus, which is very marked. In the limited diseased spots a white centre, surrounded by a red band, is seen. After the decline of the fever, the swelling subsides. The lupus spots are then covered with crusts, formed by the escaping serum, which fall off in from two to three weeks, leaving a clean cicatrix behind. Generally several injections are necessary with which to obtain this result. The changes are limited to the diseased tissue, and always go straight to the part affected, so that, if a tuberculous process be present anywhere in the body, the injection is a valuable means of discovering it, a fact which is of great value in doubtful cases of tuberculosis. The diseased tissue is generally thrown off as a dead mass, while in other cases it seems gradually to disappear. *Moreover, his remedy does not destroy the bacillus tuberculosis, but the living tuberculous tissue.* Dead caseous masses are not influenced, nor are the tissue which is made necrotic by the remedy destroyed. The remedy may be administered rapidly in increasing doses,—in three weeks five hundred times of the original dose. In tuberculous diseases of the skin, glands, bones, and joints larger doses were given, with longer intermissions. Consumptive patients—which class are very easily affected—received .01 cubic centimetre, until no reaction followed its administration; then .02 cubic centimetre, until the same result was obtained, and so on till either the original or more than the original dose was given, especially when the patients were not strong. Later they received larger and more frequent doses. Expectoration and coughing increased at first, and then entirely disappeared. The purulent sputa became viscid; then the bacilli gradually decreased, and the patients went on improving, the bacilli being found at times in the expectoration till it ceased. Night-sweats decreased, and the weight increased. Patients treated in the incipient stage of the disease were, judging from all appearances, well in from two to six weeks. Patients with cavities not too far advanced were markedly improved. In those with larger expectoration there was less expectoration, but no improvement otherwise. *Koch maintains that incipient phthisis is to be cured with certainty by this remedy.* (Later attacks will be treated as easily as was the first illness.) Perhaps the difficult cases may be helped by their being treated by surgical means, and the treatment is best pursued in hospitals. The former method of treatment by means of free air, attention to diet, etc., may still be pursued with advantage in connection with that by injections. An early trial of the new remedy is recommended, and for this an early diagnosis of phthisis is indispensable.

BERLIN, November 15, 1890.

PARIS.

(From our Special Correspondent.)

Generous Emulation—Professional Secrecy—A Medico-Pharmaceutical Conflict—Self-Perforation of Stomach after Death—Unreliability of Children's Testimony—Abortionists Hunted Down—A New Way to Dispose of Fœtuses.

Koch's new discovery is naturally the medical topic of the day. It is not within the province of a Paris correspondent to say much on the subject, especially since the process is kept a profound secret, temporarily it may be hoped. Incidentally, however, it is not amiss to state that the German scientist has been forestalled here by co-laborers working in the same field, though probably delving in another furrow. On August 18, 1890, Drs. J. Grancher and H. Martin, of the Pasteur Institute, read before the Academy of Sciences a preliminary memoir on tuberculosis vaccination, which they had, nine months before, left under seal in the hands of the secretary of the Academy of Medicine. They said the work was still incomplete; but, at the Berlin Congress, Dr. Koch having related his experiments on guinea-pigs' tuberculosis, they found themselves compelled to publish their own investigations rather sooner than they would have liked to. The experiments were made on rabbits with inoculations of tuberculosis cultures of graduated virulence. To mention only their conclusions, they averred they succeeded in imparting to rabbits great resisting power against the most virulent and deadly sort of

experimental tuberculosis, and in giving to them against the same disease an immunity lasting for an unknown period. Dr. Koch's process for guinea-pigs, they added, was apparently based on a different principle. "Hence, it may be hoped we shall have, some day, several means for effectually combating the tuberculosis bacillus." Briefly stated, Drs. Grancher and Martin's method is substantially the same as Pasteur's vaccination process for rabies. The memoir in question did not attract much notice at the time; neither did Koch's, for that matter. The case is now different. But while Koch has found many scoffers and opponents, Pasteur said at once he had not the slightest doubt on the genuineness of Koch's discovery, and on November 18 sent to him the following telegram: "M. Pasteur, and the staff of the Pasteur Institute, address to Rob. Koch all their congratulations for his great discovery." This generosity to a rival will astonish no one who knows Pasteur, but it is doubly meritorious when coming from a Frenchman to a German.

Professional secrecy, everywhere a physician's moral duty, is here a legal obligation, enforced, as you are probably aware, by penal statutes. The rule is, no doubt, on the whole, a good one. Yet, like all rules, it is liable to exceptions; for instance, when it conflicts with other obligations equally binding, and sometimes even more imperative. Thus French physicians occasionally find themselves in an unpleasant alternative, from which they would like to be relieved. As a case in point, the following occurrence was recently related before the Society of Public Medicine and Hygiene. Last spring the Z. family took furnished rooms in a town near Paris, and called in Dr. X., who found one of the children affected with the itch and another with pediculi. Next, another child took the scarlet fever, and recovered. Then the mother had a baby, and was confined in the very bed and sheets of the scarlatinous child. After accouchement there were some septic complications, but she also recovered. Finally, the family moved out. Under the circumstances, Dr. X. thought it his duty to tell the landlord that the rooms, in his opinion, should be disinfected. This was done, but the landlord sent in the bill to Z., asking for payment. Z., although a foreigner, seems well posted on French law, stoutly refused to pay, and now proposes to enter a complaint against Dr. X. for having violated the professional secret. In consequence, Dr. X. asked the Society's advice, and, if possible, its moral support in the impending prosecution. Unfortunately, the Society could promise neither. Opinions differ on the subject, and although Dr. Brouardel and others think in such cases the physician should speak, the majority believe, under the present law, he is bound to remain silent. The only remedy is to have the law amended as regards contagious diseases. Dr. X.'s case not being an isolated one,—others have been related in this correspondence,—the subject naturally came up before the Consultative Hygiene Committee of France, an official body, composed of eminent physicians, pharmacists, and sanitarians, often consulted and usually listened to by government. A national health bill being now in preparation by the Minister of the Interior, the Hygiene Committee, through their chairman, Dr. Brouardel, have requested the Ministers of War and of the Navy to lend their aid towards the passage of so important a measure. They have also recommended, among others, the addition of the following clauses: Sanitary or disinfecting work, found necessary in private houses, shall be executed at the landlord's expense; physicians shall declare the causes of all deaths, and shall report all cases of epidemic diseases as soon as they come to their knowledge.

Another case, in which a physician found himself confronted by the law of his country, is that of Dr. Poulet, of Plancher-les-Mines, whose name is probably familiar to the readers of the GAZETTE as a patient and original investigator. At his office he keeps a small stock of drugs and medicines for his own dispensing, as is his lawful right, there being no pharmacy within the legal distance. A physician in such a case is not allowed to keep open shop, and Dr. Poulet did not. In consequence he protested when, in 1888, a delegation from the Department School of Pharmacy came to inspect his stock of drugs. And when the inspectors tried to collect the statutory fee, he resisted payment, on the ground that he, not keeping open pharmacy, was not subject to inspection. From court to court the case was finally carried up, in August, 1890, as far as the Paris Council of State. The Council held that physicians keeping medicines for their own patients, in villages devoid of a pharmacy, as long as they have no open shop, cannot be submitted to an inspection instituted by law for watching over regular pharmacies. Hence the case was struck from the roll. The decision is an important precedent, as pharmacy inspectors claim that doctor's shops are, as a rule, badly kept, and need closer watching than regular stores. Perhaps they are not far from

wrong; but the question has been settled against them.

Fortunately, before the courts physicians seldom appear as defendants, but most usually as experts. We have here a society of forensic medicine (Société de Médecine légale) meeting in the Palais de Justice, and composed of eminent physicians and lawyers, before whom medico-legal topics of general interest are often discussed. At the last sitting, Dr. Vibert related an unusual instance of spontaneous perforation of the stomach after death. Not long since he had to make the autopsy of a young man, aged 19, dead from a revolver-shot in the head. On examining the stomach, he found three perforations, corresponding with as many holes in the diaphragm, and the contents of the stomach drained into the left pleural cavity. At first sight the perforations might be supposed to have a traumatic origin. Only there was no sign of blood extravasation. On the other hand, there was no trace of ulcerous affection or corrosive poison. Evidently the gastric juice had simply digested holes into the stomachal membrane, and the action must have been a speedy one, as the body was yet in a good state of preservation. The attention of medical experts is called to the possibility of such post-mortem alterations, liable to mislead microscopists when the cause of death is doubtful. At the same meeting, Dr. Motet quoted several instances showing the unreliability of children's testimony, especially girls'. One case is striking enough to be worth relating. At Toulon there were several little girls, rather neglected and running wild, and probably addicted to mutual self-abuse. One day the mother of one of them, having noticed a suspicious vaginal discharge, took the child to a midwife, who declared the girl had been assaulted by a diseased man. The child at once said it was so, adding the crime was committed in the hall-way of a house which she designated, and two of her play-fellows confirmed the fact, stating, moreover, they could identify the man if they saw him. Soon a man was arrested, on the mother's indications, and things looked bad for him. Fortunately, the judge, an old and experienced man, mistrusting the little truants, caused one of them to be shown the court clerk as being the suspected prisoner. She immediately identified him as the fellow they met in the hall-way. In a different room the court-house fireman was presented to the other little girl, who, without hesitation, declared he was the hall-way stranger. Of course the prisoner was at once discharged; but had it not been for the judicial stratagem he might have found it difficult to establish his innocence.

The sensational debate about depopulation, in the Academy of Medicine, has led to many quack propositions and a few practical suggestions. The wise idea of stopping the waste of babies naturally called attention to criminal abortion. In this ample field courts have found their services needed, and numerous prosecutions are now in progress. With them, however, we are not concerned. The points of professional interest are that abortionists, as a rule, are outsiders; that no physician, no pharmacist, and but few midwives were found guilty of such practices; and that the regular "faiseurs d'anges" (angel makers), as they are popularly called, are herbalists, nurses, and ignorant persons. A good specimen of the genus is a woman, now in a Paris jail, charged with a long list of abortions. By occupation she is a bread-carrier, but, in her spare moments, would, in a back room of the bakery, consent to relieve servant-girls "in trouble." Probably her fees were low, as she is said to have had many customers. A most curious fact, though, was elicited during the preliminary investigation. A new way to dispose of fœtuses was voluntarily disclosed by one of the unfortunates. She confessed she bought a rose-bush, lifted it from the pot, buried the embryo under the roots, and carefully replaced the tree. Next she went to the Père-Lachaise Cemetery, and on a tomb planted the flower as a votive offering to some departed relative. No one suspected her; and she was in the habit of coming regularly to water the rose-bush marking the little one's grave. There is, no doubt, something touching in the poor girl's story. But the police, a hard, unpoetical set, now keep close watch over floral offerings brought to cemeteries, the more so that the girl in question is believed to have told her secret to others.

PARIS, FRANCE, November 21, 1890.

CAN THE CORPUSCLES OF THE BLOOD BE SEEN BY THE NAKED EYE UNASSISTED?

To the Editor of the THERAPEUTIC GAZETTE:

DEAR SIR:—My attention was called to this subject about a year ago by Professor J. E. Todd, of Tabor College. He asked me if I had seen anything on the subject in the course of my reading. I told him I had not. He then said he had noticed, while looking at a white wall or into blank space, with the ciliary tension equal to that of the eye during

a "brown study," bright dots or points of light pass before the field of vision, and gave it as his opinion that they were the blood-corpuscles passing through the vessels of the retina.

Since my attention was called to the matter I have noticed the phenomena many times. When the snow is on the ground it can easily be observed by assuming a "vacant stare" and casting the eyes downward, or by looking towards the horizon long enough after sunset for the *glare* to have passed away. But the ciliary tension must be at its minimum.

These bright spots or points of light will be observed to be darting hither and thither, backward and forward, resembling the swarming of bees. However, each follows a definite channel or course, and there is no collision or interference, each point following some other point in regular and endless succession.

The reader may think I am speaking of the muscæ volitantes, but the latter have a very slow movement which is dependent upon the movements of the eye and gravitation.

The blood-vessels of the retina, as we know, are situated anterior to the rods and cones, and consequently between them and the crystalline lens; and it was always a wonder to me why they did not interfere with vision, and were not seen instead of objects farther removed.

And now I am satisfied that the *contents*, at least, *can* be seen, and that the phenomenon I have observed was the passage of red blood-corpuscles through the vessels of the retina.

I contribute this that others may observe the same and deduct something practical therefrom.

Very respectfully,
E. T. CAMPBELL, M.D.

[Our correspondent is undoubtedly correct in the explanation which he offers of one of the well-recognized entoptical defects of the eye,—the perception of objects within the eye-ball. Not only may the outline of the retinal vessels be recognized (Purkinje's figures) by various methods, but an observer may see the blood circulating in his own eye by other methods than that described first by Boisser and referred to by Dr. Campbell. Thus, the same result may be obtained by looking at the sun through a dark-blue glass, without accommodating the eye, or by looking at a very brilliant light passing through a long tube, moving the head to and fro. The phenomenon has been explained by His as due to the fact that the red blood-corpuscles, in the capillaries posterior to the external granular layer of the retina, act as small light-collecting concave disks, concentrating the light falling upon them from bright surfaces, and throwing it upon the rods of the retina. Vierordt, in fact, projected the motion on a screen, and calculated the velocity of movement as about half a millimetre per second,—a rate which corresponds very closely with measurements made elsewhere. The occasional breaks in the chain of moving bright points is probably due to the rotation of the corpuscles, causing them to throw a shadow instead of transmitting a ray of light. We can think of no practical application of these facts, except that they show that the sensitive part of the retina is its deepest layer.—ED.]

Notes and Queries.

SEVENTH INTERNATIONAL CONGRESS OF HYGIENE AND DEMOGRAPHY.

To the Editor of the THERAPEUTIC GAZETTE:

DEAR SIR:—I am requested by the Honorable Secretaries of the Committee of Organization of the Seventh International Congress of Hygiene and Demography to call attention to the fact that this Congress will be held in London during the week beginning August 10, 1891.

The governments of all countries and municipalities, and all public health authorities, universities, colleges, and societies occupied in the study of the sciences more or less immediately connected with hygiene, are invited to co-operate and appoint delegates to represent them at the Congress. The Prince of Wales will preside.

A Committee of Organization has been formed, of which Sir Douglas Galton is chairman and Professor W. H. Corfield and Mr. Shirley F. Murphy are honorary secretaries. An exhibition of articles of hygienic interest will be held in connection with the Congress. The last of these Congresses was held in Vienna in 1887, and was attended by over two thousand persons, and it is expected that the London meeting will be one of great magnitude and importance.

Very respectfully,
JOHN S. BILLINGS, M.D.,
Member of the International Permanent Committee.

WASHINGTON, D. C., October 27, 1890.

SHOULD MORPHINE AND ATROPINE BE GIVEN BEFORE CHLOROFORM INHALATION?

It has been claimed by several writers that the effects of chloroform inhalation are more quickly produced, and the anæsthetic influences of a given quantity of the drug prolonged, if a dose of morphine be given before the beginning of inhalation. This statement has naturally found its way into standard text-books. Thus Bartholow says, "Before the administration of chloroform morphine should be injected hypodermically to diminish the dangers of the inhalation, and to secure relief to the after-pain of the surgical operation;" and again, "When this is done a much less quantity of the anæsthetic is needed to induce insensibility, and the stage of narcosis is sufficiently prolonged for ordinary surgical operations without requiring renewed administration of the ether or chloroform."

In *L'Union Médicale*, August 5, 1890, is published a discussion which took place in the Paris Society of Surgery upon a paper treating of the use of hypodermics of morphine and atropine before the inhalation of chloroform. The author of the paper, M. REGNIER, was led to try this method in his practice by the recommendation of M. Dastre, who reported favorable results from its use in animals, and of M. Aubert, a surgeon, who stated that narcosis and awaking were both facilitated by the injection of ¼ grain morphine muriate and $\frac{1}{15}$ grain atropine sulphate fifteen or twenty minutes before the operation, and that inconvenient results were observed but rarely. M. Regnier used this method with a number of patients, until, unfortunately, a fatal accident occurred.

A feeble girl, aged 16, was affected with tubercular disease of the bones of the foot, and, as the lungs presented but a few râles in the apex of one side, he decided to chisel out the cuboid bone. Half an hour before the operation he gave a hypodermic injection of $\frac{1}{3}$ grain of morphine and $\frac{1}{150}$ grain of atropine. Anæsthesia was easily induced, and not more than from 5 to 7 fluidrachms of chloroform were required for the whole operation, which lasted only a few minutes. About ten minutes after the chloroform had been removed, and while the dressings were being applied, she opened her eyes without speaking, and she was then carried to her ward. Three minutes later news was brought that she had ceased breathing. Upon reaching her bed he found the respirations very infrequent. They ceased suddenly as the pulse disappeared, although feeble heart-beats were still heard. The pupil then quickly dilated. Protracted artificial respiration seemed, at the end of half an hour, to excite spontaneous respiration, but this soon failed, although supplemented by ether injections and other measures. Post-mortem examination showed anæmia of the cerebral hemispheres and medulla oblongata.

Death in this case came on very slowly from chloroform intoxication. It was quite remarkable that life could be prolonged for more than twenty minutes by artificial respiration. It was claimed that the chloroform must have been eliminated slowly, and that the elimination was rendered more slow than it would otherwise be by the influence of the morphine and atropine.

Two members of the Society reported that they had observed, in experiments on dogs, that morphine and atropine given before the chloroform produced no reflex phenomena at the beginning, but rendered more grave such complications as appeared at the end. In some cases there was quite protracted and severe dyspnœa. In dogs thus treated very little chloroform was needed; in men more was required. It appeared to be conceded that the method was useful in the laboratory, but not in the clinic, as the chances of intoxication were increased.

Another member who had tried the method stated that in male patients nothing worthy of note was usually observed; while in female patients the awaking was much more slow than with chloroform alone. He thought women were more sensitive than men to the influence of atropine. Out of five cases he had lost one patient. The operation was for nephrectomy, and lasted an hour, 15 fluidrachms of chloroform being used. After a short awakening the respiration began to fail, cyanosis appeared, and, in spite of all measures, death occurred in an hour and ten minutes.

Another member had used it in fifty or sixty cases. He did not notice any peculiarities, except that certain patients complained of insatiable thirst.

It was suggested, in conclusion, that the better results obtained with dogs might be due to the very large doses of atropine given (in proportion to the body-weight), which would be utterly out of the question in operations upon human beings.

Interesting as are these observations, and

salutary as warnings always are regarding the use of dangerous drugs, the experience of surgeons in New York does not bear out the objections urged against this long-tried and well-known method of mixed narcosis. It is true ether is the anæsthetic here, but it is equally true that no accidents have as yet occurred ; but, on the contrary, it has been found that anæsthesia can be more safely prolonged with less ether than under other circumstances, and that the patients are in a more comfortable condition after the operation. Particularly is this the case in operations upon the face, throat, and upper air-passages when the proper administration of ether is attended with unusual difficulty.—*New York Medical Record*, November 1, 1890.

THE COAGULATION OF THE BLOOD.

MM. ARTHUS and PAGÈS (Brown-Séquard's *Arch. de Phys.*, October) have propounded a new theory of the coagulation of the blood. Starting with the idea that the curdling of milk presents analogies with blood coagulation, these authors, after applying the same methods of investigation to the two processes, have arrived at the following conclusions : 1. Oxalates, fluorides, and alkaline soaps render blood non-spontaneously coagulable, even when added in very minute proportions. 2. It is upon fibrin-formation and not ferment-production that the action of these bodies is exerted. 3. These bodies produce this effect by removing soluble calcium salts from the blood. The addition of a trace of a soluble calcium salt renders blood once more coagulable after it has been rendered non-coagulable by the addition of soluble fluorides, oxalates, or soaps. The *rôle* of calcium can be played by strontium, but not barium or magnesium. 4. The ash of the most carefully washed fibrin contains calcium salts, and the amount of clot obtained is proportional to the amount of calcium when a minute amount only is present ; hence the molecule of fibrin contains calcium. This may be replaced by strontium. 5. The ferment is unable to act upon fibrinogen, except in the presence of a soluble calcium salt. 6. The rival theories of Al. Schmidt and Hammarsten are reconciled by adopting the view that fibrinogen undergoes in the presence of the ferment and of soluble calcium salts a transformation into an insoluble calcium compound,—fibrin. Schmidt's fibrinogen contained no calcium, while his fibrinoplastin did ; Hammarsten had no need of fibrinoplastin, for his fibrinogen contained the necessary lime. 7. The curdling of milk is due to a transformation of casein under the influence of a ferment, giving rise to the formation of an insoluble calcium compound. The clotting of blood is an analogous process. Green, of Cambridge, showed a few years ago that the presence of a minute quantity of calcium was essential for the production of a clot, but MM. Arthus and Pagès have much extended his observations.—*British Medical Journal*, October 25, 1890.

"IF YOU GO TO COLORADO YOU CAN NEVER RETURN."

The Seventh Annual Meeting of the American Climatological Association was held in Denver, Col., during the first week of September. The most interesting question under discussion, both to the physician and to the patient, was as to when a consumptive who has gone to Colorado can safely return to a lower altitude. It could not have failed to be suggestive to the very many consumptives who listened to this discussion to learn that physicians from Boston and other places along the sea-shore believed it safe for many patients to ultimately return to their homes ; while the doctors from the high altitudes held that it was unsafe for a consumptive ever to return to a low altitude except for short periods of from four to eight weeks during the usual vacation months of July and August. The personal interest which some physicians feel for their patients at times obscures their clear comprehension of the relations which various phases of treatment hold towards each other. So, in this instance, the question of altitude has been confounded with the question of climate.

It appears to us that the treatment of tuberculosis, whether of the lungs or other tissues, is of two kinds,—general and local. Under the general treatment comes the question of climate ; under the local, that of altitude. During the past years very considerable advances have been made in the general, or, as it may more properly be called, hygienic treatment of tuberculosis. It is now generally accepted that tuberculosis under favorable conditions is a self-limited disease, and that if the patient can be kept alive long enough he will get well. To this

end the hygienic treatment gives to the patient all that which will tend to improve his general well-being, such as proper and abundant food, the greatest possible number of hours in the open air and sunlight, the most perfect protection against colds and all provocatives of coughing, and such surroundings as shall be conducive to a cheerful frame of mind.

It is more than possible that these things cannot always be best obtained in high-altitude resorts. The local treatment consists in the application of certain medicaments, medicated air, dry air, hot air, the pneumatic cabinet, the rarefied air of high altitudes, etc. The confusion has, perhaps, arisen because it has not been recognized that the rarefied air of high altitudes acts in the same way as excitants to coughing,—namely, to increase the lung activity. Functional activity of a tissue infected with tuberculosis favors suppuration and a rapid elimination of the infecting germs; functional rest favors a slow elimination by starvation. In a tissue such as the lung, if the tubercular focus be small and localized, and if the patient's strength be still sufficient, the suppuration and rapid elimination which the rarefied atmosphere of high altitudes gives favors a rapid and perfect cure. In support of this, we find a unanimity of opinion among the members of the Association that cases of pulmonary tuberculosis coming to Colorado sufficiently early, as a rule, permanently recover. On the other hand, if the tubercular infiltration be diffuse, if the patient's strength be not good, or if the disease be well advanced, the functional activity induced by rarefied air tends to a rapid termination of the life of the patient. In this, too, the members were agreed that many cases of phthisis in an advanced stage were made worse by going to Colorado. In a word, it would appear that there are certain cases that are more rapidly cured, and other cases that are more rapidly killed, in a high than in a low altitude.—*Medical Record*, November 8, 1890.

DR. KOCH'S INVESTIGATIONS UPON THE TREATMENT OF TUBERCULOSIS.

It may be remembered that, at the International Congress, PROFESSOR R. KOCH excited much laudable curiosity by detailing his experiments to discover a substance which, when injected into the body, should have the effect of destroying the bacillus of tubercle without injuring the animal operated upon. He stated that he had found various substances to be remedies which hinder the growth of tubercle bacilli in tube cultures,—a number of ethereal oils,—among the aromatic compounds β-napthylamin, paratoluidin xylidin; some of the so-called tar dyes,—namely, fuchsin, gentian violet, methyl blue, chinolin yellow, aniline yellow, auramin; among the metals, mercury in the form of vapor, silver and gold compounds. The compounds of cyanogen and gold were especially conspicuous, their effects surpassing that of all other substances; even in a dilution of one to two millions they checked the growth of tubercle bacilli. But all these substances, though effective in tube cultures, were absolutely without effect if tried on tuberculous animals. But Dr. Koch was too far successful to be discouraged, and he thinks he has hit on a substance which has the power of preventing the growth of the tubercle bacillus, not only in a test-tube, but in the body of an animal. Even guinea-pigs, which are extraordinarily susceptible to tuberculosis, if exposed to this substance, cease to react to the inoculation of the tuberculous virus; and, still more, guinea-pigs actually suffering from general tuberculosis, even to a high degree, have the morbid process arrested, without the body being in any way injuriously affected. We have not had to wait long for the promised trial on the human subject of the efficacy of this method to restrain the development of the bacillus. Such a trial was made in the wards of La Charité, and with such promising result (according to the *Nationale Zeitung*) that Dr. Koch has been granted a prolonged leave of absence from his professional duties to enable him to pursue his investigations on a wider scale. The vast importance of the possible results of such an inquiry upon the welfare of thousands renders it all the more necessary for the world at large to imitate the caution and reticence of Koch himself, bearing in mind that hitherto he has not overstepped the limits of justifiable inference, and that he would be the first to deprecate either haste in drawing conclusions or a premature adoption of a method on which so much depends. Indeed, apart from the fact that we may be on the verge of a revolution in therapeutics, it may be said that bacteriology itself is on its trial in this momentous investigation.—*Lancet*, November 1, 1890.

INDEX TO VOLUME VI., THIRD SERIES.

(WHOLE SERIES, VOLUME XIV.)

PAGE

Abdomen, Effect of Distention of 140
Abdominal Surgery, Present Position of 381
Abrus Precatoria 113
  Poisoning 282
Acetanilide-Poisoning, Case of 245
  Effects of Very Large Dose of 331
Acetic Acid in Epithelioma 499
Acne, Treatment of 336
Adage, "Naturam Morborum Ostundunt Curationis" 318
Addison's Disease, Treatment of 357
Æthyl Bromidum 792
Air, Hot and Dry, Action of, on Temperature of Lung 550
  Superheated, in Phthisis 477
  Use of, in Examining and Treating Cavities and Canals 256
  Value of 713
Albumen in Urine, Tests for 717
Albuminuria of Opium-Eaters 482
  Proteids occurring in Urine in Various Forms 620
Albumoses, Poisonous and Defensive 496
Alcohol, Action of, on Animal Heat Functions 73
  Solutions, Abortive Treatment of Herpes by 706
Alkalies, Influence of, on Excretion of Uric Acid 706
  on Assimilation, Effects of 428
Alkaline Cachexia, The 460
Alum Enemata in Dysentery 130
Ammonia in Cocaine-Poisoning 141
Anæsthetic Mixtures 648
Anæsthetics in Natural Labor 771
  Values, Relations, and Dangers of 515, 589
Anemonine, Therapeutic Power of 475, 498
Angina Pectoris and Pseudo-Angina 191
  in Heart Palsy 256
Aniline Colors, Therapeutic Properties of the 533
Anisodus Luridus 285
Antifebrin, Poisoning by 431
Antifermentative Treatment of Infantile Diarrhœa 121
Antimonials 817
Antimony in Inflammations 360
Antiphlogistics 747
Antipyretic, A New 249
Antipyrin, Action of Mono- and Bichloral 648
  Analgesic Value of, Intra- and Post-Partum 753
  and Bromide of Ammonium in Epilepsy 761
  and Carbolic Acid 499
  and Chloral Hydrate 215
  and its Incompatibles 500
  Antifebrin, and Phenacetin, Comparative Value of, as Antipyretics 45
  Effect of, on Solubility of Caffeine 259
  in Whooping-Cough, Chorea, and Enuresis 288
  Physiological Action of 319
  Salicylate of, or Salipyrin 692
Antisepsin of Paramonobromacetanilide 416
Antiseptic Dressing, A New 108
  Surgery in General Practice 247
Antrum, New Diagnostic Sign of Abscess of 71
Aristol 216, 557
  Action of, in Ulcerations of Skin 548
  A Ready Mode of Preparation of 718
  in Affections of the Skin 762
  in Ozæna 573
Armeria Vulgaris, Therapeutic Employment of 499
Armstrong, S. T., Case of Acetanilide-Poisoning 245
Arsenical Paralysis 53
Arterial Pressure, Action of Caffeine, Morphine, Atropine, Ergotin, and Digitalis 768
Astringents, Action of 111
Atropine as an Antagonist to Chloroform 119
  as an Antidote to Potassium Cyanide 790
Auditory Meatus, Treatment of Inflammation of External 845
Aulde, John, Administration of the Digestive Ferments 732
  Calcium Sulphide in Suppurating Diseases 305
  Cannabis Indica 523
Aural Complications in Acute Specific Fevers 195
Autoplastic Method, Treatment of Leg Ulcers by Italian 839

Bactericides 358
Bacteriology, Present State of 679
Balsams, Excretion of, in the Urine 614
Barr, G. W., Some Points in Negative Therapeutics 368

PAGE

Berlin Letter 58, 60, 210, 212, 278, 347, 423, 492, 565, 641, 711, 852, 855
Biliary Colic, Treatment of 847
Bile, Effect of Oil on Secretion of 647
Bilio-Bronchial Fistula, Case of 498
Bismuth-Benzoate for Soft Chancre 338
Bladder, washing out Male, without Catheter 629
Bleaching Teeth 645
Blood, Coagulation of 863
Bonducin as a Febrifuge 790
Bones, Inflammation of, of Typhoid Origin 485
Borax in Epilepsy 392
"Bradycardia," or Slow Action of the Heart 719
Brain Surgery 540, 574
Breast-Milk in Difficult Infantile Digestion 486
Bressler, F. C., Toxic Effects of Emplastrum Cantharidis 450
Bright's Disease, Treatment of 396
  Chronic, Treatment of 612
Brodie, Dr. Wm., Death of 608
Bromoform in Whooping-Cough 72, 607, 694
Bronchial Asthma, Rational Treatment of 197
Broughton, L. G., Cholera Infantum 741
Brown-Séquard's Discovery 14
Bruises, To Prevent Discoloration in 427
Bubo, Treatment of 553
Burns, Treatment of 755
Buttermilk, Some Therapeutic Uses of 369
Butyl-Chloral in Trigeminal Neuralgias 502

Cactus Grandiflorus in Heart-Disease 118, 606
Caffeine, Action of 329
  on Circulation 294
  Hypodermically in Post-Partum Hemorrhage 699
  Physiological Action of 775
Calcium Sulphide in Suppurating Diseases 305
California, Climate of Southern 727
Calomel as a Diuretic 480
  in Cardiac Dropsy 381
Camphor Group, Pharmacology of 543
  Solvents for 575
Camphoric Acid in Night-Sweats of Phthisis 260
Cannabis Indica 523
  Dangers of 355
  in Diseases of Stomach 684
Cantharides Plaster 430
Carbolic Acid Injections in Erysipelas 201
  in Hydrocele 417
Carbon Bisulphide in Dysentery 500
Cardiac Diseases 769
  Dyspnœa 527
  Remedies, Mode of Administration of 479
Carpenter, C. R., Rhus Toxicodendron 93
Cascara in Syphilitic Ulcerations 451
Catgut Ligatures, Infection of 288
Catha Edulis, Action of 762
Cathartics, Action of 172
Cedar, Case of Poisoning by Oil of 371
"Census of Hallucinations" 426
Cerebral Contusion 846
Cerna, David, Nitrous Oxide Anæsthesia and the Circulation 509, 583
Cetrarin 695
Chloralamide 337
  Pharmacology of 840
  Hypnotic Action of 97
Chloral Hydrate in Eclampsia 71
  Administration of 139
  and Antipyrin, Combination of 326
Chlorodyne Hypodermically in Diarrhœa 357
Chloroform Inhalations in Acute Pneumonia 169
  and Phthisis 792
  Fatal After-Action of 186
  Inhalations, Should Morphine and Atropine be given before? 862
  Syncope from 489
Cholectotomy 35
Cholera Infantum, Etiology and Treatment 741
  Treatment of 780
Choroid, Rupture of, in a Hæmatophilia 310
Chromic Acid in Cystic Goitre, Ranula, and other Cysts 537

PAGE

Chronic Diseases, A Word on the Treatment of 318
Cinchona, Compound Tincture of, in Rheumatic Fever..... 808
Cinchonidine, Therapeutic Value of Sulphate of..... 768
Cinchonine Iodosulphate..... 632
Clark, C. C. P., Compound Tincture of Cinchona in Rheumatic Fever..... 808
Cocaine Anæsthesia in Iodine Treatment of Hydrocele..... 415
Influence of, on Muscular Contraction..... 541
in Diabetes..... 40
in Surgery..... 427
in Yellow Fever..... 200
Prevention of Toxic Effects of..... 461
Physiological Action of..... 763
Some Objections to, in Genito-Urinary Surgery..... 847
Cocillana as an Expectorant..... 96, 333
Codeine in Diseases of Women..... 429
Narcotic Action of..... 457
Value of..... 388
Coffee, Oil of..... 399
Cold Bath in Scarlet Fever..... 432
Baths in Measles..... 479, 546
in Pneumonia..... 553
Colchicine, Pharmacological Properties of..... 429
Physiological Action of..... 702
Colorado, If You go to, You can never return..... 863
Condensed Milk, Amount of Fat in..... 47
Condurango and Condurangin, Use of..... 761
Bark, Active Principle of..... 283
Constipation: Its Nature and Treatment,..... 452
in Children, Dangers of..... 410
Contagious Diseases, Prophylaxis of..... 536
Copper Arsenite in Bowel Complaints..... 19
Corpuscles of Blood, Can they be seen by the Naked Eye unassisted?..... 860
Corrosive Sublimate Injections in Purulent Empyema..... 486
Coto Bark and Cotoine in Diarrhœa..... 620
Coughs, For Persistent..... 430
Creolin, Eczema from Use of..... 631
Creosote in Phthisis..... 632, 703
Creosotinic Acid, Action of..... 265
Croton Oil..... 469
Croup, Simple Treatment for..... 357
Treatment of..... 647
Crystalline Substances, Administration of Insoluble..... 404
Cubebic Acid in Gonorrhœa..... 456
Cumulative Action of Certain Medicines..... 251
Cystitis in the Female..... 260
in the Male..... 324
in Women, Treatment of..... 558

Deaver, J. B., Operative Treatment of Strictures of Male Urethra..... 656
Delirium Tremens, Treatment of..... 770
Delphinium Staphisagria..... 694
Diabetes, A New Theory of..... 122
Communicability of..... 773
Gastric Functions in..... 432
Diarrhœa, Treatment of Chronic..... 262
Diazo-Reaction, Value of..... 703
Dietetic Rules in Diseases of Digestive Organs..... 772
Digestions, Artificial and Natural..... 690
Digestive Ferments, Administration of..... 732
Digitalin Preparations, Comparative Activity of..... 175
Dioscorea Villosa..... 576
Diphtheria, Dangers to Circulatory Organs in..... 401
Disinfectant, A New..... 480
Crystalline..... 323
Disinfectants, Relative Germicidal Power of..... 717
Diuretics, Effects of..... 490
Mode of Action of..... 285
Diuretin, Some New Clinical Experiments with..... 844
Dixon, S. G., Apparatus for Collecting Dust and Fungi..... 308
Dodge, C. L., Constipation..... 452
Drops, Number of, in a Gramme..... 575
Dropsy, Treatment of..... 359
Duboisine..... 284
Dujardin-Beaumetz, New Therapeutic Agencies..... 1, 145, 289, 433, 649, 793
Treatment of Affections of the Stomach..... 505, 577
Duodenitis after Burns, Pathology of..... 128
Dust and Fungi, Apparatus for Collecting..... 308
Dyspepsia..... 431
Mechanical Treatment of Chronic..... 757
Treatment of Flatulent..... 392

Earache, For the Relief of..... 647
Ear, Massage of the..... 335
Ectopic Gestation..... 472
Electrical Endosmosis for Gouty Concretions..... 700
Electricity, Administration of Certain Drugs by..... 116
Therapeutic Value of..... 530
Elder, Diuretic Properties of the..... 609
Ellyson, R. M., Poisoning by Oil of Cedar..... 371
Emplastrum Cantharidis, Toxic Effects of..... 450
Empyema, Discussion on..... 393
Engstad, J. E., Cactus Grandiflorus in Heart-Disease..... 606
Epilepsy, Dietetic Treatment of..... 810
Treatment of..... 203
Epileptics, Behavior of Pupils in..... 355
Epsom Salts in Acute Dysentery..... 766
Erysipelas, Inoculation with Microbes of, in Diphtheria..... 635
New Methods of treating..... 673
Eseridin..... 121
Eserine in Tetanus..... 837
Etiological Therapeutics..... 816
Ether, Injections of, for Neuralgia..... 648
in Medication by the Skin..... 554

PAGE

Ethoxycaffeine..... 427
Ethyl and Methyl, Fluorides of, Anæsthetic Action of..... 313
Bromide as an Anæsthetic..... 542
Eucalyptus in Whooping-Cough..... 30
in Scarlet Fever..... 54
Endometritis, Treatment of..... 48, 323
Euphorbia Pilulifera, Notes on..... 449
Euphrasia Officinalis and Treatment of Coryza..... 100
Exalgine, Action of..... 776
Poisonous Effects of..... 574
Excipient, A New..... 792
Exophthalmic Goitre, Therapeutics of..... 839
Eye-Strain..... 187

Faculty, Changes in..... 500
Falk, E., Hydrastinine in Uterine Hemorrhage..... 86
Ferguson, John, Dietetic Treatment of Epilepsy..... 810
Fever, Treatment of..... 257
Field, Henry M., Alkaloidal Strychnine Unsafe..... 302
Some Strong Practical Therapeutic Points..... 11
Floods and their Results from Sanitary Stand-Point..... 143
Fluorescein in Diagnosing Lesions of Cornea..... 330
Fluoroform..... 504
Food Preservatives..... 573

Galvano-Cautery in Purulent Ophthalmia..... 760
Gastric Dyspepsia, Therapeutics of..... 837
Juice, Chemistry of, in Diagnosis..... 622
Digestive Power of..... 556
The Free Acid of, during Digestion..... 770
Ulcer..... 91
Gelsemium Sempervirens, Dose of..... 66
Dose of Fluid Extract of..... 214
in Local Spasms and Neuralgias..... 480
Glass, Safe Passage of Piece of, through Digestive Tract..... 254
Glycerin Injections and Suppositories..... 550
Glycerinum Saponatum..... 426
Glycosuria..... 42
Tests for..... 692
Gold, Bromide, in Epilepsy..... 356
Gonorrhœa, Injection Treatment of Acute..... 127, 485
Abortive Treatment of..... 484, 541
in Women, Diagnosis of..... 480
Treatment of Acute..... 468, 535
Gonorrhœal Rheumatism, Treatment of..... 676
Gout, Chemistry of..... 487
Grapes, Diuretic Effects of..... 503
Guaiacum as a Purgative..... 836
Guarana in Chronic Diarrhœa..... 287
Gundrum, F., Climate of Southern California..... 727
Gurjun Oil as an Expectorant..... 400

Hæmoglobin Compound..... 380
Hæmoptyses of Elderly Persons, Non-Tubercular and Non-Cardiac..... 72
Hæmoptysis, Treatment of..... 835
Haines, C. H., Cascara in Syphilitic Ulcerations..... 452
Hammond, W. A., Weak Heart and its Treatment..... 667
Hay Fever, Contribution to Therapeutics of..... 311
and Local Treatment..... 476
New Remedy for..... 426
Headache, Localization in some Forms of..... 697
Heart, Functional Disorders of..... 688
Innervation of the..... 415
The Rapid..... 403
Massage of the..... 330
Weak, and its Treatment..... 667
Heat, Therapeutic Effects of, on Syphilis..... 557
Helleborein, Local Action of..... 114
Hemorrhoids, Cure of..... 49
Hepatic Abscess, Surgical Treatment of..... 199
High Altitudes, Respiratory Functions in..... 843
Hurd, E. P., Tablet Triturates and Compressed Pills..... 372
Treatment of Puerperal Convulsions..... 721
of Puerperal Hemorrhages..... 237
of Septic Accidents of the Puerperal State..... 439
Kate C., Zander's Mechanico-Therapeutic Institute..... 101
Hydatid Tumors..... 843
Hyderabad Chloroform Commission..... 170, 175
Hydracetin..... 576
Hydrastinine in Uterine Hemorrhage..... 86
Hydrastis Canadensis, Derivatives of..... 483
Hydrochinone, Antithermic Properties of..... 464
Hydrochloric-Glutin-Peptone-Sublimate in Syphilis..... 751
Hydrocyanic Acid, Physiological Action of..... 42
Hydrofluoric Acid, Inhalations of..... 477
Hydronaphthol as a Specific in Tinea Tonsurans..... 114
in Enteric Fever and Diarrhœa..... 544
Hydroxylamine..... 744
Hygiene and Demography, Seventh International Congress of 861
Hyoscyamus, Dose of the Alkaloids of..... 644
Hypnal, Physiological Properties of..... 767
Hypnotics, The New..... 63, 102
Old and New..... 745
Value of the Different..... 623
Hypnotism..... 34, 225

Ice-Bag, Treating of Pneumonia by the..... 37
Ichthyol in Diseases of Women..... 619
Important Work, An..... 34
Infancy and Childhood, Surgery of..... 198
Influenza, Aural and Cutaneous Complications in..... 571
Therapeutics..... 106
Treatment of..... 139
Ingrown Nail, Treatment of..... 792
Insensible Perspiration..... 373
Insomnia and Hypnotics..... 674
Intestinal Absorption, Therapeutics of..... 422

PAGE

Intestinal Antisepsis ... 401
in Typhoid Fever ... 706
Intrapleural Injections in Purulent and Infectious Pleurisies ... 846
Iodine and Bromine, Administration of, by Rectum ... 123
and Iodides, Action of, on Blood-Pressure ... 678
and Salicylate Preparations, Antagonism between ... 765
in Vomiting ... 398
Tincture of, Injections in Goitre ... 194
Iodoform Emulsion in Cold Abscess ... 432
Substitutes for ... 503
Iron, Soluble Saccharate of ... 284

Jenks, Wm. F., Memorial Prize ... 355
Jequirity, Active Principle of ... 485, 548

Keratin ... 789
Klophel, C. G. B., Urinary, Urethral, Catheter, or Urine Fever ... 152
Koch's, Dr., Investigations upon the Treatment of Tuberculosis ... 864
Kola Nut, Physiological Properties of the ... 359

Lactation during Menstruation ... 215
Lactic Acid in Diarrhœa ... 555
Lanolin ... 570
Larynx, Cortical Motor Centre of ... 456
Lead-Poisoning ... 32
Libel Suit, A Two Hundred Thousand Dollar ... 790
Liver, Abscess of, Method of Cure of ... 404
New Method of examining ... 690
Removal of Portion of, by Elastic Ligature ... 719
Lime, Antiseptic Properties of ... 129
Lobeline, Action of ... 118
Local Anæsthesia ... 503
London Letter ... 62, 280, 342, 494, 774
Lymphadenoma and its Treatment ... 269

Magnesia Isinglass as a Substitute for Plaster of Paris ... 270
Mattison, J. B., Treatment of the Morphine-Disease ... 599
Meat, Peptones of ... 496
Meatus Urinarius, Diphtheria of ... 718
Medical Congress, Tenth International ... 143, 350
Emergencies, Treatment of ... 124
Meier, H. F., Strychnine Pills ... 167
Mental Overwork in Modern Life ... 459
Menthol in Acute Rhinitis and Influenza ... 117
in Hyperemesis of Pregnancy ... 504
in Vomiting of Pregnancy ... 288
Mercurial Poisoning ... 490
Preparations, Injection of, in Syphilis ... 617
Mercury Bichloride Injections in Cancerous Tumors ... 756
Bichloride and Biniodide, Comparative Value of ... 771
Excretion of ... 623
Intra-Muscular Injections of, in Syphilis ... 337
Kidneys in Poisoning by ... 693
Salicylate of ... 406
in Syphilis ... 430
Yellow Oxide of, Subcutaneously ... 124
Methyl Chloride as a Local Anæsthetic ... 691
Methylene Blue, Analgesic Action of ... 529
Metrorrhagia, Diagnosis and Treatment of ... 462
Milk Analysis, Standards for ... 143
Digestibility of Boiled ... 374
Mississippi Valley Medical Association ... 788
Mollities Ossium cured by Oöphorectomy ... 575
Morphine, Administration of, by the Nostrils ... 771
as an Antidote to Atropine ... 503
Disease, Treatment of the ... 599
Elimination of, by Stomach, Injected Subcutaneously ... 49
Remarkable Tolerance of ... 67
Excretion of, in Milk ... 338
Subcutaneously in Puerperal Convulsions ... 569
Mucous Membrane, Transplantation of ... 841
Mutz, C. M., Gastric Ulcer ... 91
Myxœdema, Curability of ... 718

Naphthalin and Cataract ... 142
Naregamia, Tincture of ... 334
Naso-Pharyngeal Disease, Relation of, to Catarrh of Middle Ear ... 838
Neck, Glandular Tumors of the ... 217
Negative Therapeutics, Some Points in ... 364
Nephro-Lithotomy, Symptoms and Conditions which justify ... 202
Nitrogenized Food in Fever, Use of ... 811
Nitro-Glycerin in Asthma ... 647
in Shock ... 66
Nitrous Oxide Anæsthesia and the Circulation ... 509, 583
Nona, The Nature of ... 500
Nutmeg, Narcotic Effects of Essence of ... 268
Nutrition, Effects of, on Artificial Dermatitis ... 681

Obesity, Physiological Treatment of ... 263
Olive Oil in Biliary Colic ... 314
Ophthalmic Review, The ... 144
Opium and Morphine, Influence of, on Uric Acid ... 115
Optic Nerve, Excision of, with Enucleation ... 621
Orexin, a New Stomachic ... 252, 377, 611
Action of ... 316
The Last of ... 495
Otorrhœa Pellets ... 648
Ouabaïne in Whooping-Cough ... 411
Ovarian Tumors, Diagnosis of, from Uterine Fibroids ... 95
Oxygen, Use of, in Leuchæmia and Grave Anæmias ... 108
Sources of Failure in Use of ... 361
Its Therapeutic History and Uses ... 532

Pallor, The Cause of ... 287
Panbotano as a Substitute for Quinine ... 313
Pancreas and Cœliac Plexus, Effects of Extirpation of ... 531
New Function of the ... 376

PAGE

Pancreatic Diabetes ... 267
Papain in Ear-Diseases ... 129
Paraguay Tea ... 633
Paraldehyde, Death from Overdose of ... 716
Parasite in Skin-Disease, Rôle of the ... 848
Paris Letter ... 64, 135, 208, 276, 344, 421, 638, 708, 771, 858
Patterson, J. A., Rupture of Choroid in a Hæmatophilia ... 310
Pereirine with Quinine in Malaria ... 122
Peritoneum, Drainage of the ... 353
Peritonitis, Suppurative—Laparotomy; Recovery ... 395
Peru, Balsam of, in Phthisis ... 266
Production of Nephritis by Balsam of ... 266
Pharmacy, The Future of ... 786
Phenacetin in Rheumatism ... 474
Phenyl-Urethan, or Euphorin, Properties of ... 750
Urethan ... 123
Philadelphia Board of Health, An Objectionable Rule of the ... 820
Phosphorus and Rickets ... 842
Oxide, Action of ... 646
Picric Acid in Skin-Diseases ... 107
Picrotoxin and its Uses ... 758
Pilocarpine, Hypodermic Injections of, in Hepatic Jaundice ... 46
in Chronic Articular Rheumatism ... 461
as an Antagonist to Belladonna ... 617
Phthisis, Curability of Acute ... 833
Gastro-Intestinal Disorders and Diet in ... 682
Pleurisy and Rheumatism, Acute ... 815
Painless Dry ... 685
Pneumonia Diplococcus in Milk of Woman with Pneumonia ... 791
New Contribution to the Study of ... 141
Podophyllin-Poisoning, Fatal ... 353
Potassium Iodide, Physiological Action of ... 39
Bromide as an Antidote to Iodoform ... 263
Chlorate and Ammonium Chloride, Detonation of Tablets of ... 716
Ferrocyanide, Physiological Action of ... 470
Nitrate for Malarial Fevers ... 261
Œdema of Glottis from ... 327
Tellurate in the Night-Sweats of Phthisis ... 572
Pregnancy, Vomiting in Later Months of ... 356
Prentiss, D. W., Three Cases of Remarkably Slow Pulse ... 20
Prescriptions, Incompatibility in ... 137
Prostate Gland, Operations on the ... 354
Operations on the ... 756
Protopine—A New Opium Alkaloid ... 754
Puerperal Endometritis, Antiseptic Curetting of Uterus in ... 633
Hemorrhages, Treatment of ... 237
Pulmonary Phthisis, Over-Exertion in ... 803
Pulse, Three Cases of Remarkably Slow ... 20, 539
Purgatives, Abuse of ... 502
Pyoktanin—A New Antiseptic ... 429
Pyosalpinx, Diagnosis of ... 36
Pyrethrum Flowers, Toxic Principle of ... 673

Quinine and Mercurial Injections, Treatment of Syphilis by ... 53
Oxytocic Action of ... 202
Subcutaneous Injection of ... 560, 714

Recurrent Nerves, Physiology of ... 536
Red Corpuscles, Effects of Certain Substances on the ... 772
Nose, Treatment of ... 499
Reichert, E. T., Action of Alcohol on Animal Heat Functions ... 73
Action of Caffeine on the Circulation ... 294
Resorcin, Use of, in Whooping-Cough ... 270
for Rodent Ulcer ... 428
Respiration, Hypodermic Artificial ... 718
Retinol and Colophane in Vaginitis ... 402
Reviews ... 5, 132, 205, 271, 339, 417, 491, 561, 635, 707, 769, 850
Rheumatism, Past and Present Treatment of ... 378
Rhinoscleroma ... 569
Rhus Aromatica in Enuresis ... 471
Toxicodendron ... 93
Rixa, Alex., Contribution to Therapeutics of Hay Fever ... 311
Rose, A., Warm-Water Bath in Erysipelas ... 365
Roussel's, Dr. J., Treatment of Phthisis ... 826
Rubidium and Ammonium Bromide, Physiological Action of ... 818
Bromide and Ammonium in Epilepsy ... 34
Ruck, Karl von, Detrimental Effects of Over-Exertion in Pulmonary Phthisis ... 803
Gastro-Intestinal Disorders and the Diet in Pulmonary Phthisis ... 662
Prophylaxis of Tuberculosis ... 221
Russian Steam Baths, Influence of ... 406

Saccharin in Cystitis ... 131
Salicylic Acids, Natural and Artificial ... 119
Saline Injections into Veins in Diabetic Coma ... 283
Salol, Action of, on the Kidneys ... 704
and Terpine Hydrate in Colds ... 268
Antisepsis of Renal Passages by Use of ... 123
Collodion ... 575
in Cholera ... 696
in Diseases of Genito-Urinary System ... 499
in Gonorrhœa ... 326
in Pharyngeal Inflammations ... 120
Santal Oil, Use of ... 246
Santonin and Castor Oil ... 485, 574
Santoninossime, A New Anthelmintic ... 573
Scarlatina without Pyrexia ... 791
Scarlatinal Nephritis, Treatment of ... 115
Scarlet Fever, Contagion of ... 65
Scopolia Atropoides ... 286
Carniolica ... 101
Sciatica, Rational Treatment of ... 390
Scott, W. E., Water as a Therapeutic Agent ... 738
Sea-Sickness, A New Theory of ... 789
Secretion, Topical Action of Drugs on ... 621
Selenious Acid, Physiological Action of ... 626

PAGE

Septic Accidents of Puerperal State, Treatment of... 439
Simulo... 692
Small-Pox, Treatment of... 575
Sodium Biborate in Epilepsy... 466
Chloride in Facial Neuralgia... 131
Creosotinate... 261
Fluoride, Properties of... 469
Iodide... 499
Salicylate, Action of, on Uterus... 72
and Salicin, Comparison between, in Acute Rheumatism... 408
as a Cholagogue... 328
in Dysmenorrhœa... 107
Silico-Fluoride, Properties of... 542
as an Antiseptic... 322
Sulpholeate, Dermatological Value of... 413
Solanin and Solanidin, Action of... 204
Solanum Carolinense in Epilepsy... 71
Sphacelin-Poisoning... 395
Spinal Cord, Symptoms of Lesions of... 264
Standardization in New Pharmacopœia... 378
Starr, Louis, Eruption of Permanent Teeth and Ailments of Late Childhood... 228
Sterilized Milk... 791
in Infantile Diarrhœa... 842
Stockwell, G. Archie, Brown-Séquard's Discovery... 14
Values, Relations, and Dangers of Anæsthetics... 515, 589
Stomach, Treatment of Affections of... 505, 577, 721
Strontium, Action of Soluble Salts of... 689
Strophanthus, Action of... 489
Strychnine, Alkaloidal, Unsafe... 302
in Alcoholism... 431
Pills, Alkaloid *vs.* Sulphate... 167
Poisoning, Case of... 790
Sugar in the Blood... 618
Sugars, Action of, on the Organism... 551
Diuretic Properties of... 199
Sulphaminol as an Antiseptic... 702
Sulphonal as a Hypnotic... 31
in Typhoid Fever... 67
Therapeutic Value of... 315
Sulphur, Disinfection by Fumes of Burning... 643
Dioxide, Disinfection by... 111
Worthless for Fumigation... 216
Sulphurous Acid in Whooping-Cough... 426
Surgical Dressing, A New... 267
Sweating Feet, Another Remedy for... 430
Syzygium Jambolanum in Artificial Diabetes... 46

Tablet Triturates... 377
Tannic Acid, Susceptibility to External Use of... 616
Tannin, Idiosyncrasy to the Use of... 215
Tea, New Constituent of... 214
Adulteration of, in China... 288
Teeth, Eruption of Permanent and Ailments of Late Childhood, Relationship between... 228
Tetanus, Etiology and Treatment of... 773
Thallin, Physiological Action of... 45
in Typhoid Fever... 619
Therapeutic Agencies, New... 1, 145, 289, 433, 649, 793
Points, Some Strong... 11
Theobromine and Diuretin, Diuretic Action of... 759
Diuretic Action of... 99
Salicylate of... 621

PAGE

Thiol and Ichthiol... 117
in Skin-Diseases... 647
Throat-Affections... 430
Tonsils, Is Removal of, Dangerous?... 504
Tracheal Injections in Pneumonia... 130
as a Mode of Medication... 629
Trade-Marked and Proprietary Medicines... 785
Trichloracetic Acid as a Test for Albumen... 354
in Nose and Throat Affections... 332
Trional and Tetronal... 699
Tubercle Bacilli, Passage of, through Intestinal Canal... 774
Bacillus, Establishing Tolerance for... 696
Tuberculosis, Cure of... 820
Further Communications in Regard to the Remedy against... 821
Inoculation a Protection against... 698
of Pleura and Lung, Surgical Treatment of... 630
Preventive Inoculation in... 828
Prophylaxis of... 221
Turpentine Inhalations in Diabetes... 756
Twain, Mark, on Therapeutics of By-Gone Times... 316
Typhoid Fever, Transmission of, by Air... 335

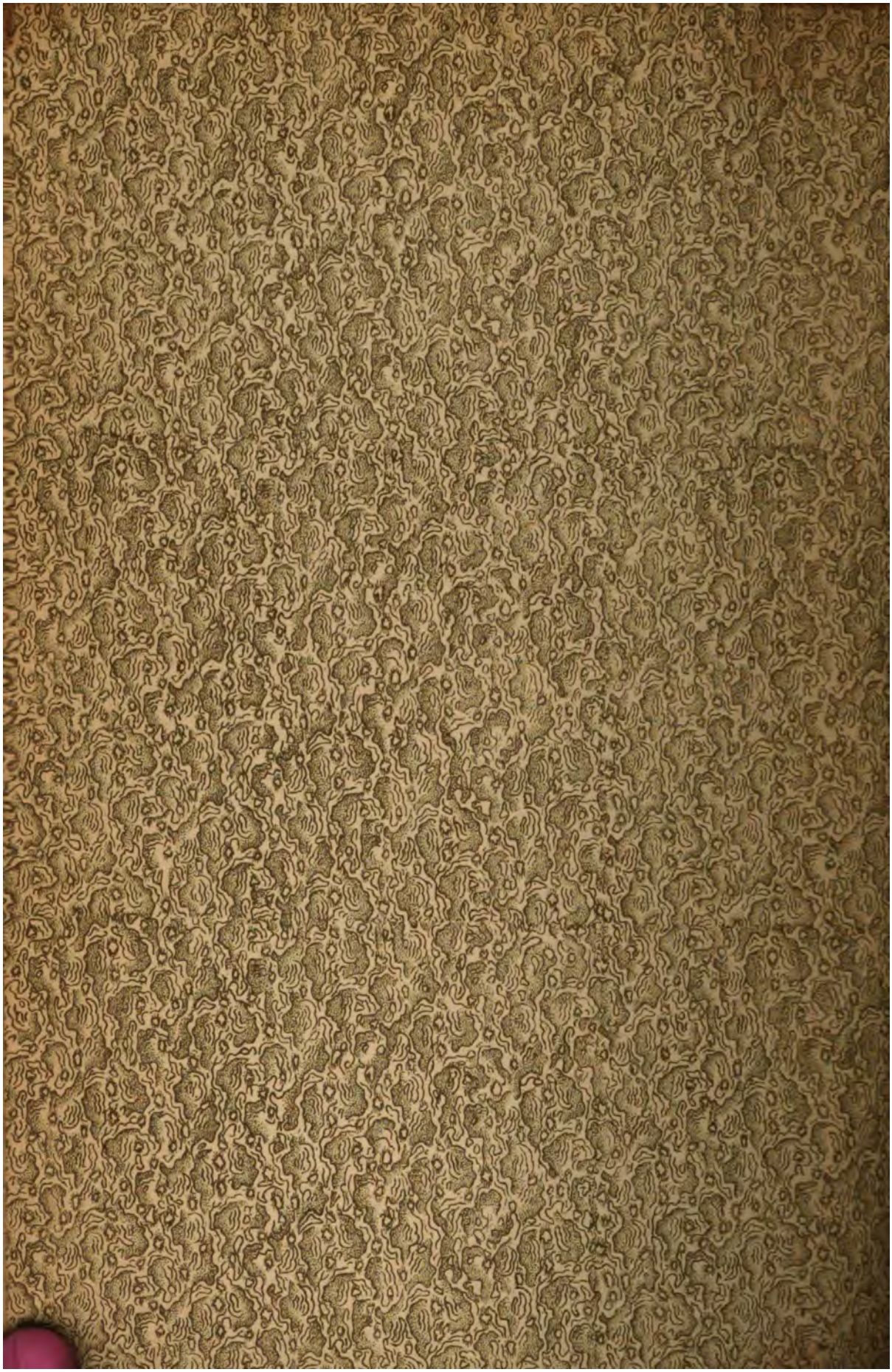
Ulex Europæus, Pharmacological Properties of... 475
Urethra, Asepsis of Instruments employed in... 409
Operative Treatment of Strictures of Male... 656
Urethritis, Antisepsis in Anterior... 682
Uric Acid in the Blood... 788
Urinary, Urethral, Catheter, or Urine Fever... 152
Uterus, New Operation for Displacement of... 143
Uvula, Pulsation of, Sign of Aortic Insufficiency... 478

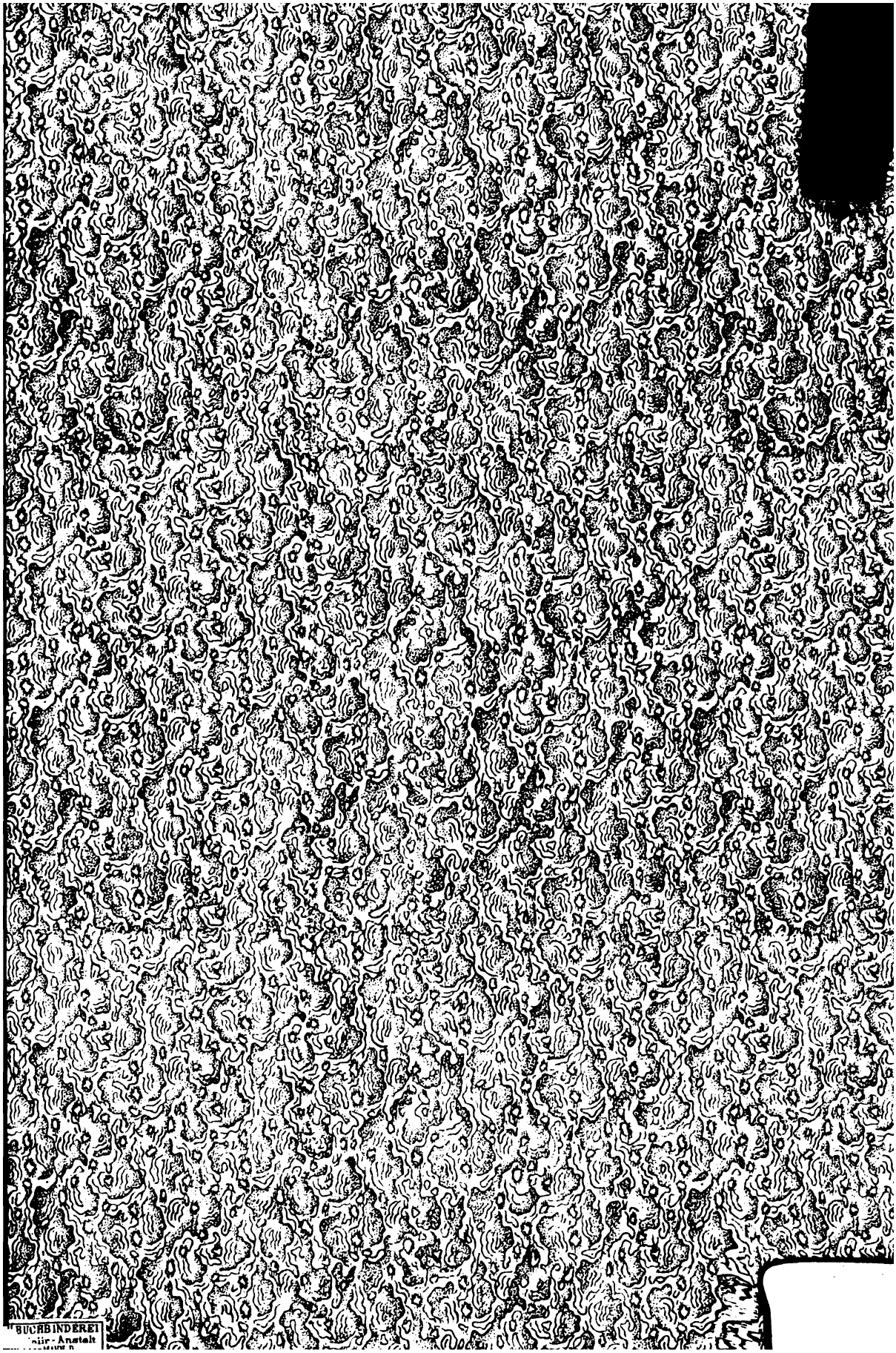
Vaccination, Treatment of Whooping-Cough by... 838
Vermiform Appendix, Treatment of Inflammation of the... 841
Vertigo, Nature and Treatment of... 764
Vichy Water, Intestinal Calculus from Abuse of... 558

Ward, S. M., Some Therapeutic Uses of Buttermilk... 399
Wallian, S. S., Sources of Failure in Use of Oxygen... 361
Warm Bandages, Hypnotic Effect of... 353
Water Bath for Erysipelas... 365
Water as a Therapeutic Agent... 736
Subcutaneous Injection of... 755
Western Pennsylvania Medical College... 354
White, J. William, Glandular Tumors of the Neck... 217
Whooping-Cough, Method of Arresting Spasm of... 337
Nervous Affections in Course of... 267
Rare Complication of... 567, 715, 786
Some New Remedies for... 610
"Wild Melons," Case of Poisoning by... 716
Window-Pane Barometer... 357
Winter-Green, Essence of... 142
Wood, H. C., Nitrous Oxide Anæsthesia and the Circulation... 509, 583
Woodbury, Frank, Nitrogenized Food in Fevers and Wasting Diseases... 811
Workman, R., Notes on Euphorbia Pilulifera... 449
Worsham, L., Copper Arsenite in Bowel-Affections... 19
Wounds, Superficial Suturing of... 471

Yellow Raspberry, Properties of... 54

Zander's Mechanico-Therapeutic Institute in Stockholm... 161
Zinc Chloride Pencils in Chronic Metritis... 72
in Uterine Catarrh... 416




BUCHBINDEREI
...nür - Anstalt